MARCH 9, 1959

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

Steel Takes on Warmth of Color and Feel

It acquires those qualities from a plastic coating applied in liquid form in a continuous mill process. Many colors and textures are available on vinyl coated sheets, now making their commercial debut . . . . following Page 72

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Bellwether Stamping Industry Sees Steady, Continued Business Upturn

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What Basic Metal Buyers Want

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Atomics' Economic Weather Cloudy

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New Way To Melt Reactive Metals

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You Can Get Extra Mileage Out of Your Drill Presses

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Where the Steel Went in 1958

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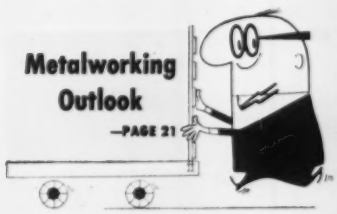
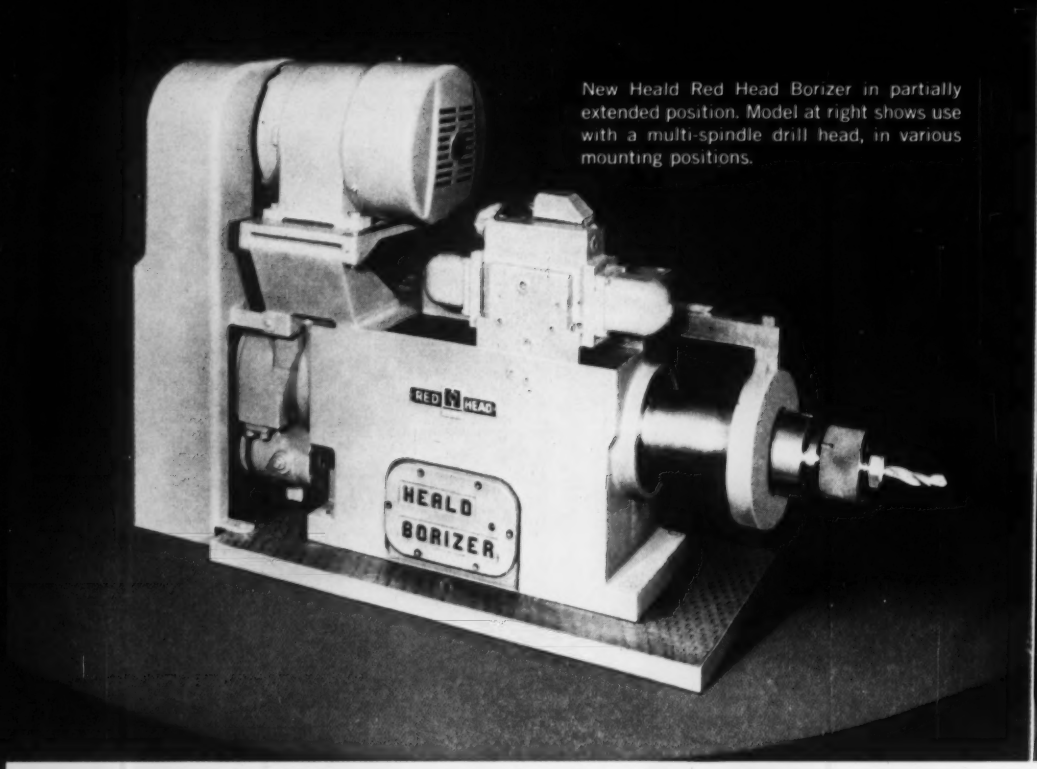
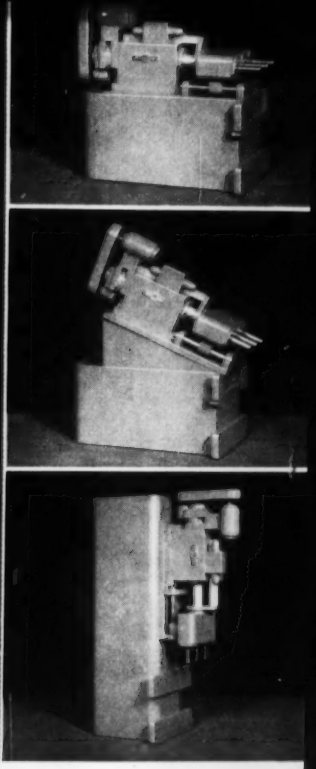
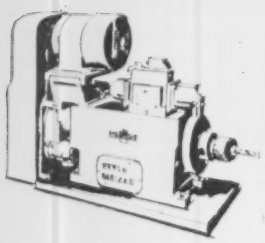




New Heald Red Head Borizer in partially extended position. Model at right shows use with a multi-spindle drill head, in various mounting positions.





Presenting the new Heald

BORIZER

Another **NEW** PRODUCT *by Heald*

☐ File for Reference
☑ Send for Bulletin

A completely self-contained unit for rotating and feeding single or multiple tools in automated setups

Designed primarily for driving multiple-spindle drill units, it rotates tools and can supply its own hydraulic power. It feeds tools in to the work at any desired rate and rapid traverses out when the operation is done. In short, the new Heald Red Head Borizer can do just about any drilling, reaming, counterboring, chamfering, and plunge facing operations. Under conditions consistent with its design and purpose it is also capable of boring operations similar to those performed on Heald Bore-Matics.

Its compact design permits grouping a number of units in a variety of positions on a single base machine or along an automated line. And its compact, self-contained construction simplifies relocation for job changeovers. Note also that this unit can be mounted horizontally, vertically or at any desired angle.

Heald Red Head Borizers incorporate the basic design and specifications of precision Red Head Boringheads and are available in four sizes, with strokes of 8, 10, 12 or 15 inches. An adequate thrust range is available for multiple drilling operations. Easily accessible dogs control cylinder stroke and adjustable valve gives infinitely variable feed rates within the feed range. The unit may be operated with integral or central hydraulic systems or with integral or centralized electrical controls.

Ask your Heald engineer for further details, or send for a copy of Bulletin No. 5-2, Issue 1.

HEALD

It PAYS to come to Heald

THE HEALD MACHINE COMPANY

Subsidiary of The Cincinnati Milling Machine Co.

Worcester 6, Massachusetts

Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

Why we make so many types of screw wire

Bethlehem makes many different types of screw wire to suit each of the major groups of screws—wood, machine and tapping (sheet-metal)—which face different job requirements. And each of the many types of heads—round, flat, recessed, filister, etc.—poses different manufacturing problems.

Thus the ideal wire for a given type of fastener will differ in some way from wire made for other kinds of screws. Producing the right kind of screw wire for each specific requirement is a Bethlehem specialty. Some of this wire must have good machining properties. Some must readily respond to heat-treatment—or withstand severe cold-heading.

All of these requirements mean close control of such factors as chemical composition, heat-treatment and mechanical properties, which determine how we'll process your wire in our modern wire mills. Thorough inspection at every stage of production is but one phase of the quality-control standing behind every ton we ship.

Bethlehem makes just about every kind of steel wire. Some are general purpose grades; others like screw wire, are custom-made for a specific application. In all cases you can count on Bethlehem quality and cooperation. We invite you to consult us. Just phone the nearest Bethlehem office, or drop us a line at the address below.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Dr. J. N. BERRETTONI, *Director of Statistical Quality Control, asks...*

What's your fastener AQL?

Here are important keys to obtaining *guaranteed fastener quality* to meet your specific needs.

Careful evaluation of print tolerances is the first step. This means placing each dimension into a critical, major or minor category. For example, a major category may be one where only one dimension in a hundred is allowed to be out-of-tolerance. This 1% then becomes the Accepted Quality Level (AQL). The same type of evaluation is applied to physical and chemical characteristics, plating requirements.

Clear definition of your quality levels can also help reduce your costs. Example: recent quality evaluation of a special fastener showed that, out of a total of twelve dimensions, only two were "majors". Why pay for twelve major dimensions when only two are really essential?

L & S quality level guarantees, evidenced by written certifications, are based on the extensive use of statistical quality control methods. We use MIL-STD-105A, MIL-STD-414, and Dodge and Romig tables to certify incoming raw material and outgoing finished product. For process certification, quality control methods and charts of Dr. W. A. Shewhart are employed at every stage of manufacturing.

Take advantage of this strict L & S Quality Control to cut your receiving and in-process inspection costs.

L & S Fastener Engineering helps you "tighten up" on...

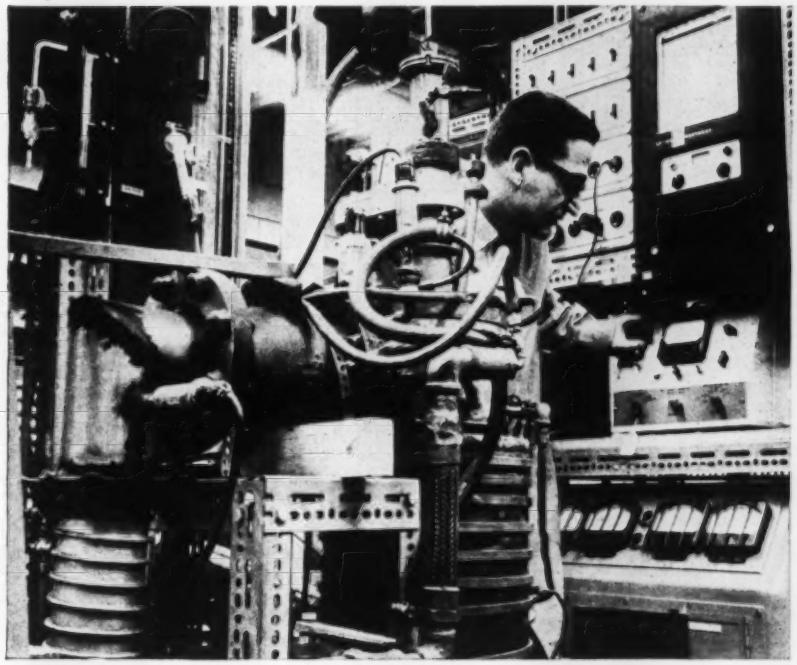
- **PURCHASING COSTS**
- **INSPECTION AND HANDLING COSTS**
- **ASSEMBLY COSTS**

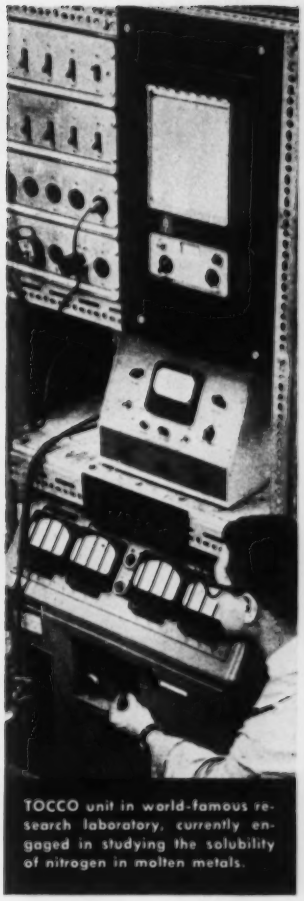
LAMSON & SESSIONS

5000 TIEDEMAN ROAD • CLEVELAND, OHIO

Plants in Cleveland and Kent, Ohio • Chicago and Birmingham

ideal climate for a hot idea . . .





TOCCO unit in world-famous research laboratory, currently engaged in studying the solubility of nitrogen in molten metals.

3000°F. . . . ± 2°F. . . .

with TOCCO* *Induction Heating*

Heart of this complex looking laboratory setup is a 15 kw, 10,000 cycle TOCCO Induction Heating unit. More and more research laboratories, in industry and in educational and research institutions are finding TOCCO the ideal high temperature source. Many TOCCO units are today in use not only in metallurgical experimentation but in high temperature chemistry and solid state studies.

TOCCO's advantages for use in research laboratories include:

- complete lack of radiant heat and gases
- clean and compact—only about four square feet of floor space required
- extremely accurate temperature control
- whisper-quiet operation
- extreme versatility
- ideal for heating in vacuum or controlled atmosphere

Whether you're interested in a production workhorse or a laboratory tool, it will pay you to investigate TOCCO induction equipment as a fast, efficient and accurate method for heating ferrous and non-ferrous metals.

THE OHIO CRANKSHAFT COMPANY

Mail Coupon Today— NEW FREE Bulletin

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Please send copy of "Typical Results of TOCCO Induction Heating — Principles, Applications, Equipment."

Name_____

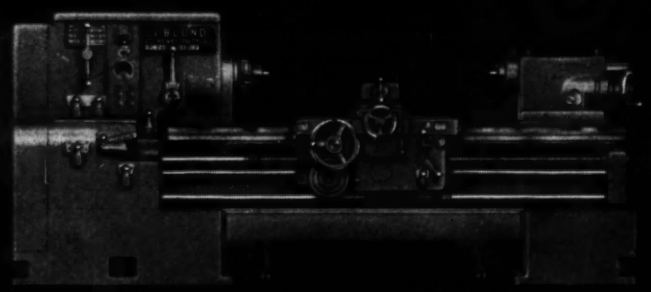
Position_____

Company_____

Address_____

City_____ Zone____ State_____

THE RIGIDEST LATHES IN EVERY CLASS YOU'LL FIND IN THE LINE OF



This is the LeBlond 20" heavy duty lathe. Basically a 40 HP machine, it was modified to test tools for tomorrow—150 HP at speeds in excess of 10,000 sfm. The basic rigidity was there all the time—the margin of engineering excellence that is traditionally LeBlond. Write for your LeBlond Complete Line Catalog No. C-58.

LEBLOND

THE R. K. LEBLOND MACHINE TOOL CO. CINCINNATI 8, OHIO

World's Largest Builder of A Complete Line of Lathes for More Than 71 Years

This Week in STEEL The Metalworking Weekly

March 9, 1959
Vol. 144 No. 10

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A new chapter is about to be written in steel's fantastic growth story. It will guide you in planning.

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STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1959 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

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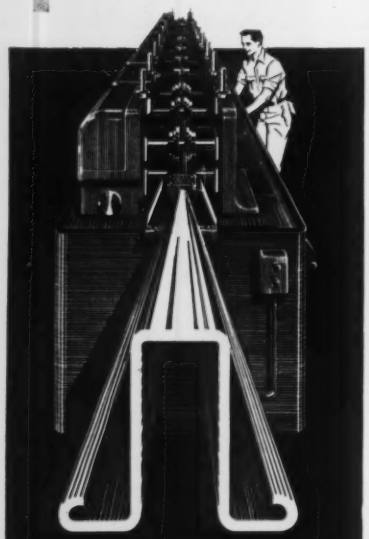


COLD ROLL FORMING MACHINES
ROTARY SLITTING LINES
PIPE AND TUBE MILLS
ferrous or non-ferrous

behind the scenes

New Material Born

STEEL's Pittsburgh editor, Bill Wallace, hurried through a cold, wet, January dawn to keep an appointment with Richard P. Lord, director of product development, United States Steel Corp. Additional journeys and interviews would take him from Pittsburgh, to New York, to Cleveland—always in inclement weather (mostly on account of what else can we expect in winter?), but he didn't mind too much because he was on the track of an important story.

On the first time around he approached Mr. Lord, shook himself like a Labrador retriever, and remarked that it was raining. Good reporters are like that; they don't miss anything. Nor did Bill miss any points of the remarkable story Mr. Lord outlined for him, a story which you may read beginning on Page 73. Basically, the United States Steel Corp. has created a new product, a combination of steel and plastic. It has color, feels like leather, has the strength of steel, and may be bent, rolled, deep drawn, welded, and—well, consult the article for technical details.

Mr. Lord explained that the USS cures and bonds liquid plastisols to steel in a continuous mill coating process, in gages from 18 to 28, in widths up to 52 in. The resulting steel sheets and coils can then be embossed with any texture that can be engraved on a printing roll. The material is available to industry in almost

any shade or color. Mr. Lord (left) is saying all this to Bill in the illustration included herewith.

Because color means so much to the story, the editors went whole hog, and splashed with a set of four-color lithographic reproductions. Let it be explained that the casual use of four-color reproduction in an average business paper editorial presentation is not as common as one might suppose. USS supplied the color transparencies, Art Director Bill Kellogg supervised the layout, Crane-Howard Lithograph Co., Cleveland, reproduced it, and Associate Managing Editor Vance Bell—who could scarcely wait to read proofs—declared that it was about the most exciting article STEEL had published in a right smart spell.

Vinyl coated steel is amazing stuff. USS boiled it two days, then deliberately tried to set it afire, only to learn to its great astonishment (and satisfaction!) that it stood up continuously under 160° F, softened slightly at 350° F, and charred at 400° F. A man armed with a blowtorch couldn't set it afire because all tests indicated that it would not support combustion.

The embossed textures and bright colors are definite marketing points for the product; it is sold on its warmth and feel, as well as its strength.

Persian Interlude

An item in the *Edgar Allen News*, house organ of the Edgar Allen & Co. Ltd., Imperial Steel Works, Sheffield, England, reveals the death of a sheep in Doroud, Iran. Doroud is down the road a piece from Khorramshah. The Edgar Allen people erected a large cement manufacturing plant in Doroud, an event that didn't go unnoted by the pious Persians. They celebrated the erection by killing a sheep, an event that didn't go unnoted by an Edgar Allen director, W. J. McBride, who was visiting the plant site at the time. Mr. McBride made some photographs to exhibit to his fellow directors. Bloody handprints appeared on the kiln because, after the sacrifice, everybody went back to work, and you can't expect honest workmen to wash their hands every 5 minutes.

Did the following scene take place later in the Sheffield office? An officious clerk, studying the photographs at McBride's invitation, looks up suddenly. "Excuse me, sir, but did you notice the great muddy handprints on our nice new kiln, sir?"

McBride: "Not at all, Hawkins; not mud; BLOOD!"

New Deals

The professor was dealing five card stud, and one of the players was complaining that he always got the same old cruddy hands. "Practically impossible," said the professor. "From an ordinary pack of 52 cards, I can deal ..... different combinations of five cards each, so the likelihood of duplicate hands is remote."

Can you fill in the blank?

Shrdlu

(Metalworking Outlook—Page 21)

Get new-forging performance at 1/3 the cost from ERIE FOUNDRY REBUILDING SERVICE

Here at the Erie Foundry Rebuilding "Hospital", we disassemble and inspect your forging hammer, remachine worn surfaces, true bearings, replace broken parts, repair cracked parts. Once the hammer is reassembled, tested and put back in operation, it'll be as spry and sound as a new machine—but at one-third the cost!

Stands to reason that the leaders in forge manufacture for over 60 years should be the best source for forge repair.

Regardless of who made it, or how badly it's cracked, broken or worn, your forging hammer will recover most quickly at Erie Foundry's Rebuilding "Hospital". Write for the complete story.

ERIE

THE WORLD'S GREATEST NAME IN FORGING SINCE 1895

ERIE FOUNDRY CO.
ERIE 2, PA.

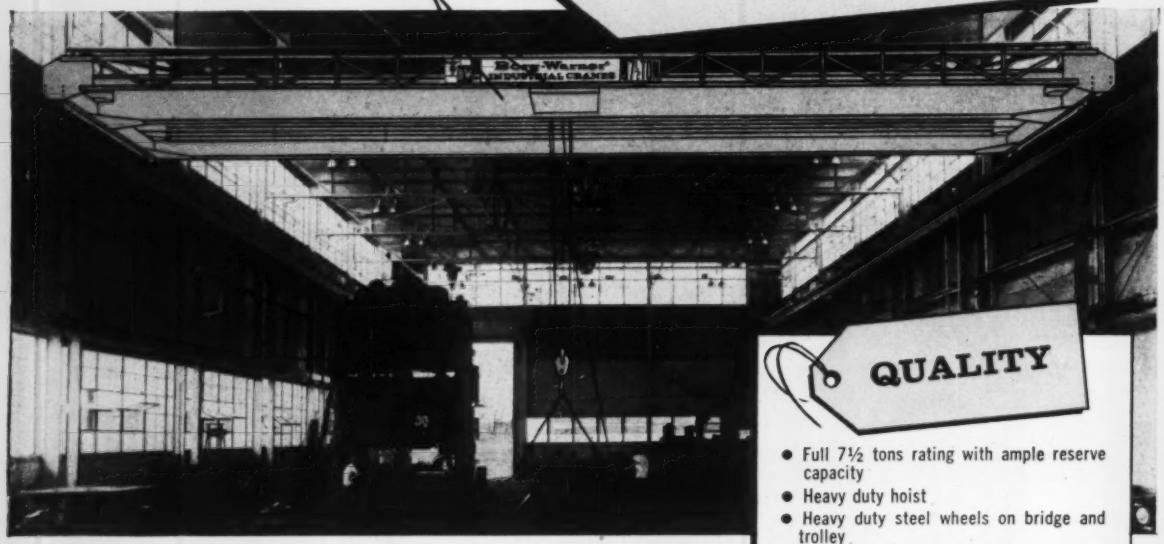
EF-59-02

Borg-Warner Industrial Cranes

Quality at a price you can afford...

$9900.00

For a 7½-Ton, 60 Ft. Span,
3 Motor, Top-Running Double Girder
Industrial Service Crane



QUALITY

- Full 7½ tons rating with ample reserve capacity
- Heavy duty hoist
- Heavy duty steel wheels on bridge and trolley
- All welded jig bored and jig assembled end trucks
- Long life precision ball and roller bearings
- Large gusset plates at end trucks
- Outrigger machinery girder construction
- Heavy duty gear reduction bridge drive
- Fluid coupled bridge and trolley drives
- Full magnetic push button control
- Magnetic bridge brake

MODERN DESIGN

The crane illustrated is a typical double girder installation. For shorter spans, smaller capacities and lighter or intermittent duty Borg-Warner Industrial Cranes can supply your needs at even lower prices.

Why Borg-Warner Industrial Cranes are BETTER VALUES

Value is determined by QUALITY *and* PRICE . . . and, a price like this for superior Borg-Warner Industrial Cranes construction and performance assures you of top value for your materials handling investment.

If you want to boost your production and operating profits by making full use of overhead space for materials handling . . . if you can use the extra storage space an overhead crane will provide as compared with fork-truck stacking . . . if you can benefit from aisles and work areas cleared of floor-type handling equipment . . . it will pay you to consider a Borg-Warner top-running, motor-driven crane like this. The cost may be far less than you had imagined. One crane owner thought it would cost him nearly four times this price to duplicate his crane.

Borg-Warner Industrial Cranes offers a complete line of overhead cranes . . . for light, medium or heavy service . . . constant or intermittent service at slow, medium or high speeds . . . operation from cab or floor. Get in touch with B-W Industrial Cranes today for answers to your materials handling problems.

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Make it better.

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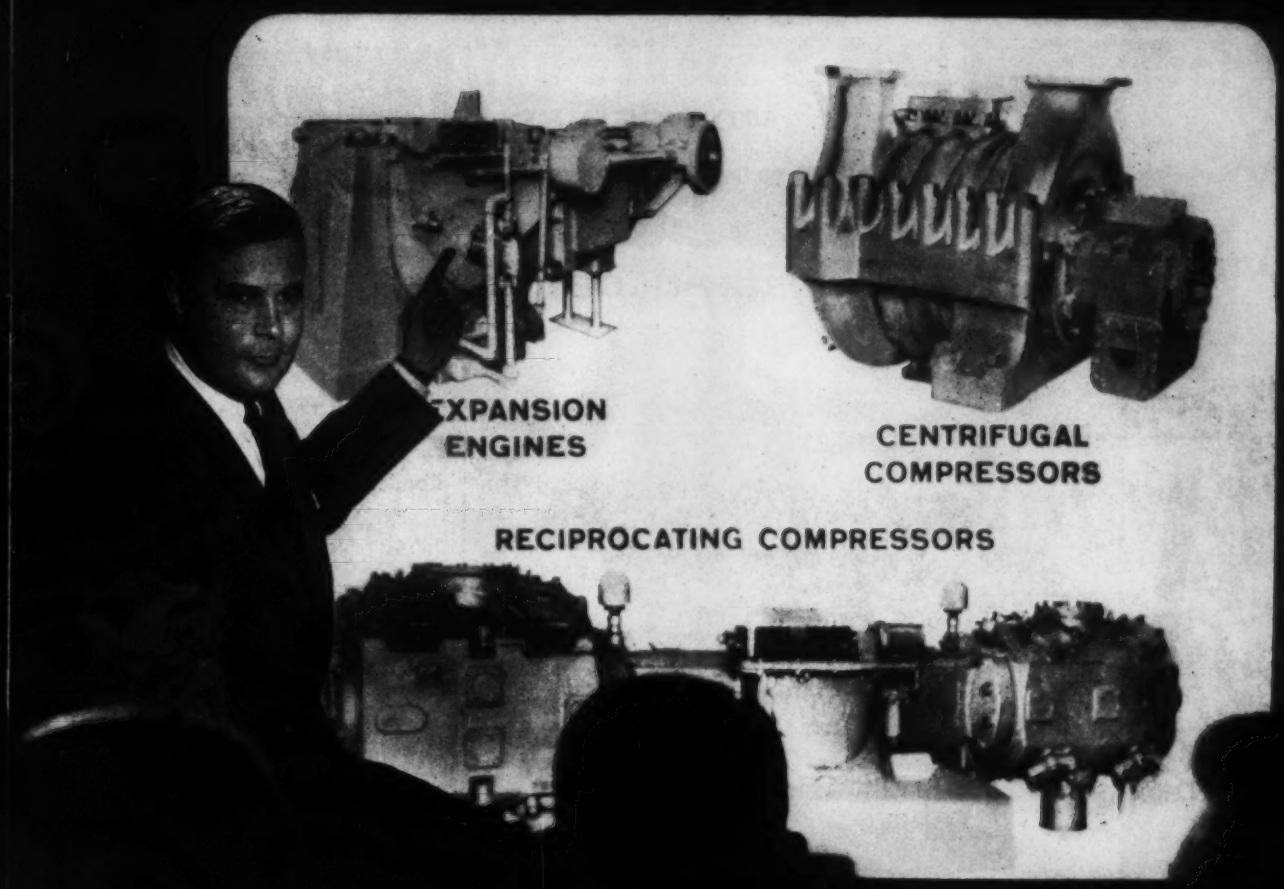

George Edick, *Sales Manager Domestic Division, The Cooper-Bessemer Corporation, displays three types of units for oxygen production and explains...*

How Cooper-Bessemer can help you plan oxygen facilities to improve steel-making

It will pay you to check Cooper-Bessemer when you start to plan oxygen facilities for steel production because:

Unbiased analysis. Since we offer all types and sizes of compressors and expansion engines, we can apply the units best suited to your specific needs.

Integrated installation. We can provide complete engineering service for the entire power-compression-expansion operation, including En-Tronic controls for most economical operation.

Unmatched service. Our outstanding field service and warehouse facilities nearby assure prompt attention to your operating needs... at start-up time and for the years to come.

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•
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less space
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HERE are design changes that greatly enhance the flexibility, usefulness and convenience of Variable-Pulley Drives. Directly connect motor and machine. Get infinitely variable speeds, compactly and economically. Adjust speeds accurately and conveniently while running. Variable-Speed Pulley — Ratings to 15 H.P.; Speed Ranges to 4:1. Variable-Speed Combination Pulleys — Ratings to 25 H.P.; Speed Ranges to 10:1.

REQUEST A COPY OF OUR NEW CATALOG No. 70, (illustrated above)

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Distributors In All Industrial Areas. In Canada — Peerless Engineering Sales, Ltd., Toronto-Montreal

LETTERS TO THE EDITORS

Excellent Coverage

Your recent article, "You Can Make Ceramic Tools Pay Off" (Dec. 15, 1958, p. 128) provided excellent coverage of the subject. I would like to get six copies.

W. M. Hallett
Staff Engineer
Metallurgical Div.
Caterpillar Tractor Co.
Peoria, Ill.

Readers Shop for Plans

Please send me an extra copy of your excellent article, "Incentives, Challenge to Managers" (Feb. 9, p. 52).

J. A. Janson
Factory Manager
National Cooperatives Inc.
Albert Lea, Minn.

• • •

I find this article of particular interest to us. May we have six extra copies?

Dwain Carr
Time Study Supervisor
Dempster Mill Mfg. Co.
Beatrice, Nebr.

Erie RR Not in Erie, Pa.

On Page 55 of the Feb. 9 issue of STEEL, a picture caption describes a special gondola car said to be constructed in the Erie Railroad's Erie, Pa., shops. The Erie Railroad does not come within 45 miles of Erie, Pa. Perhaps this picture was taken in the Meadville, Pa., yards.

John Jackson
Abrasives Sales Engineering Dept.
Products Div.
Cincinnati Milling & Grinding Machines Inc.
Cincinnati

• *The gondola cars were actually fabricated at Youngstown.*

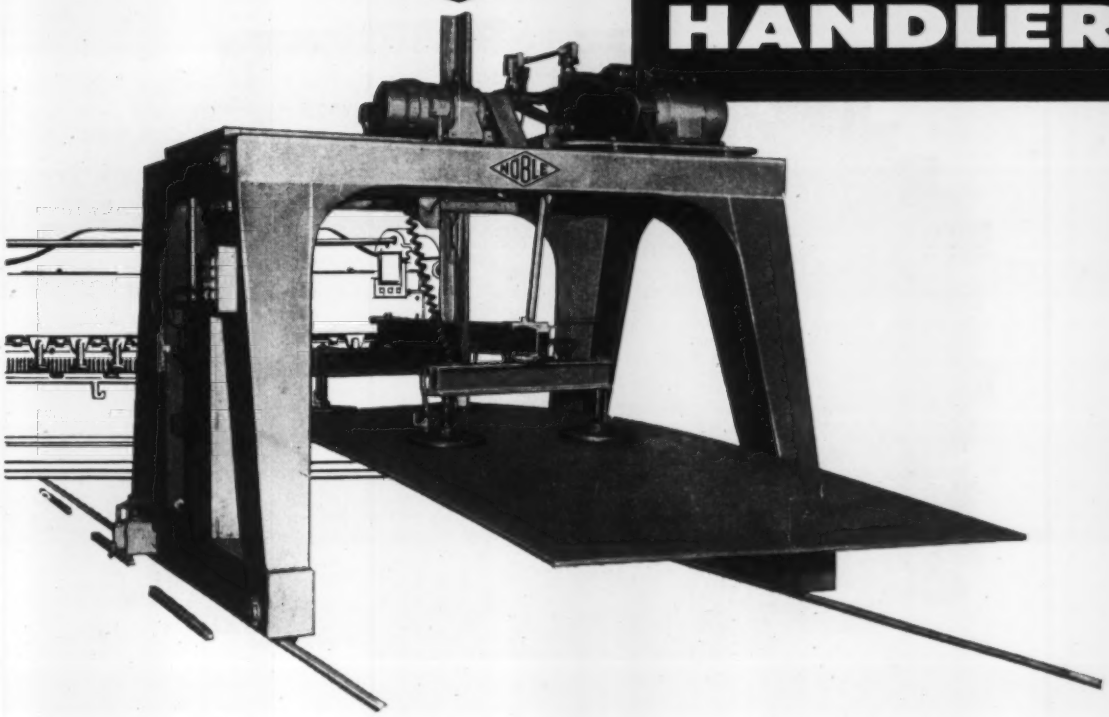
STEEL Points Up Trends

I find STEEL useful for keeping up with industry trends, and I am well aware of its prestige with people in our industry. That's why I hasten to point out a mis-

(Please turn to Page 12)

How to Make Your Shear a Production Tool

-ADD A NOBLE *Automatic* PLATE HANDLER



Faster Plate Handling at Lower Cost

The NOBLE Automatic Plate Handler eliminates the 3 slow, costly and often dangerous manual operations sketched at left. The usual 2- or 3-man crew needed to pry up the plate, attach lifting hooks, operate the crane or hoist and move the plate into position is eliminated. At a touch of the control button, your NOBLE Automatic travels to the stack, picks up a plate, raises it to proper height, brings it right to the ball points or casters and puts it into position for shearing, punching, or whatever operation is required. Machine operators and their helpers spend their time on production, not manhandling plate!

LESS IDLE MACHINE TIME...

With a NOBLE Automatic on the job, there's always a plate ready at the machine — no idle standby while operators help wrestle another one off the pile and onto the feed table. You get maximum earning power out of your machine investment.

INCREASED PRODUCTION...

The natural result of reduced idle machine time and faster plate handling. NOBLE Automatic Plate Handler users report a gain of 20% or more, depending on type of application.

THREE TYPES AVAILABLE...

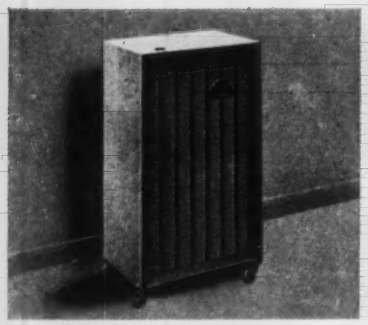
Standard NOBLE automatic plate handling systems are available in floor-mounted rail, overhead rail and radial transfer types. Standard capacities are 1,000, 2,000, 3,000 and 4,000 lbs.

NEW BROCHURE AVAILABLE... describes economies of automatic plate handling, proper applications, typical system layouts, and all NOBLE equipment involved. Write for your free copy today; please address Dept. S-3.

NOBLE COMPANY

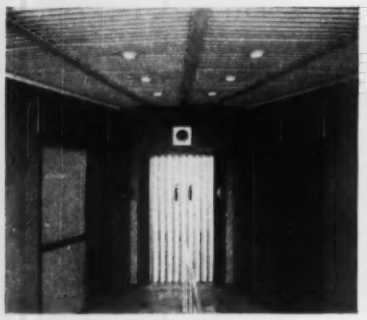
1860 Seventh Street
Oakland 20, California

Which of these PRODUCT IMPROVEMENTS can step up your sales?

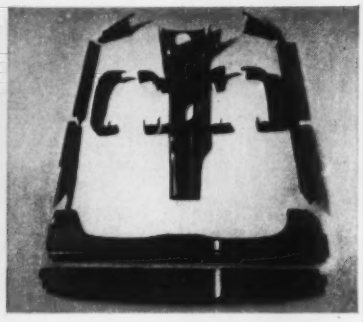


Smarter appearance? Ebco's Oasis dehumidifier is high-styled with a cabinet of tweed-finish COLOVIN vinyl laminated to steel. Case is pierced, notched, drawn and formed on same equipment that is used for metal alone.

Strength without weight? By using COLOVIN vinyl laminate, Samsonite creates a spectacularly modern shape in luggage that combines the weightlessness and strength of magnesium with the look and feel of top-grain leather.



Indestructible finish? At the Brussels Fair this handsome Atomium corridor featured bulkheads of linen-finish COLOVIN vinyl laminated to steel. Despite the abuse of heavy traffic, both color and finish remained fresh.



Ease of machining? All these parts of the Thunderbird interior are formed from leather-finish COLOVIN vinyl-on-steel. The laminate is machined on standard equipment, requires no painting, finishing, or costly hand operations.

Get them all with this new material!

Colovin vinyl permanently bonded to steel, aluminum, magnesium or wood offers unlimited possibilities for restyling painted products with the authentic look and feel of fine fabrics or leathers. In production it can be machined and formed on standard equipment as precisely as metal alone, is even more damage-proof, and requires no painting, finishing or costly hand operations.

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Please send me your brochure, "Colovin Meets Metal."

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LETTERS

(Concluded from Page 10)

print in your article, "Lackawanna Growth Seen" (Feb. 16, p. 101). The correct capacity of Bethlehem Steel's Lackawanna plant was 3.6 million tons in 1950, not 3 million. The percentage gain is correctly stated as 67 per cent.

J. P. Chamberlain

Economic Analyst
Publications Dept.
Bethlehem Steel Co.
Bethlehem, Pa.

Requests Address

I am interested in the abrasive saw illustrated in your article, "Saw Spurs Use of Structural Tubing" (Feb. 2, p. 87). Will you please send me the address of the manufacturer, Wallace Supplies Mfg. Co.?

O. H. Ross

Warehouse Supervisor
Solar Steel Corp.
Cleveland

• *The address is* 1300 *Diversey Parkway, Chicago* 14, *Ill.*

Who Publishes Book?

In "Why Explosive Forming Works" (Jan. 19, p. 62), you mention a book written by John Pearson, "Behavior of Metals under Impulsive Loads." Can you tell me who publishes this book?

Martin T. Miller

Assistant Chief Process Engineer
Delco-Remy Div.
General Motors Corp.
Anderson, Ind.

• *The publisher is American Society for Metals,* 7301 *Euclid Ave., Cleveland* 3, *Ohio.*

Copies for Representatives

Would it be possible for you to send us 25 copies of "Why Sheet, Strip Mix Is Changing" (Feb. 9, p. 108)? This article was interesting to us, and we would like to send it to our representatives.

R. J. Elliott

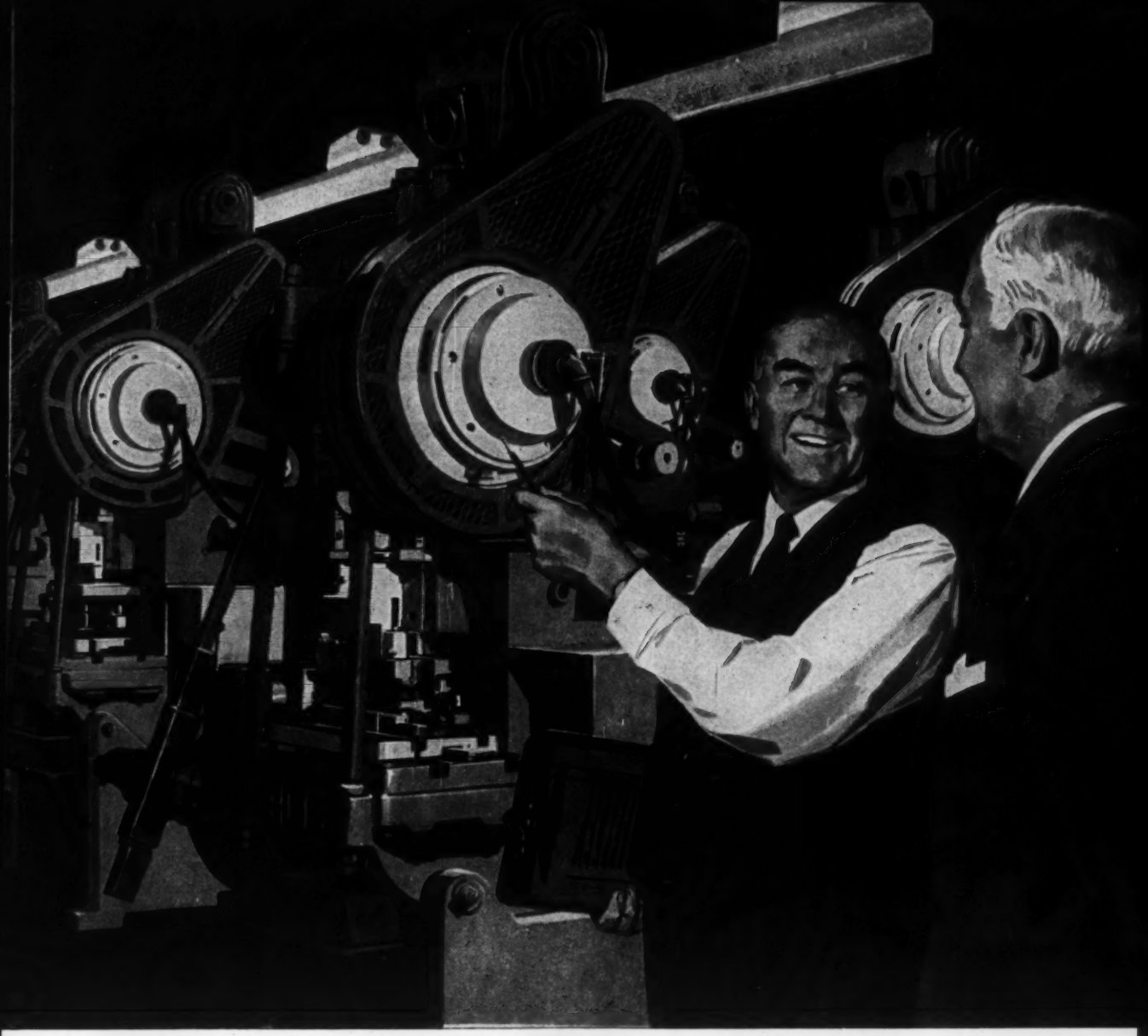
Elliott Bros. Steel Co.
New Castle, Pa.

Helps Purchasing Personnel

Will you send me two copies of "Zirconium: Where It Is; Where It's Going" (Jan. 26, p. 76). This is a good article and helpful to purchasing personnel. I would like to see more articles like this on various other metals and alloys.

H. E. Shoufler

Assistant Purchasing Agent
Canning Machinery Div.
Food Machinery & Chemical Corp.
Hoopeston, Ill.



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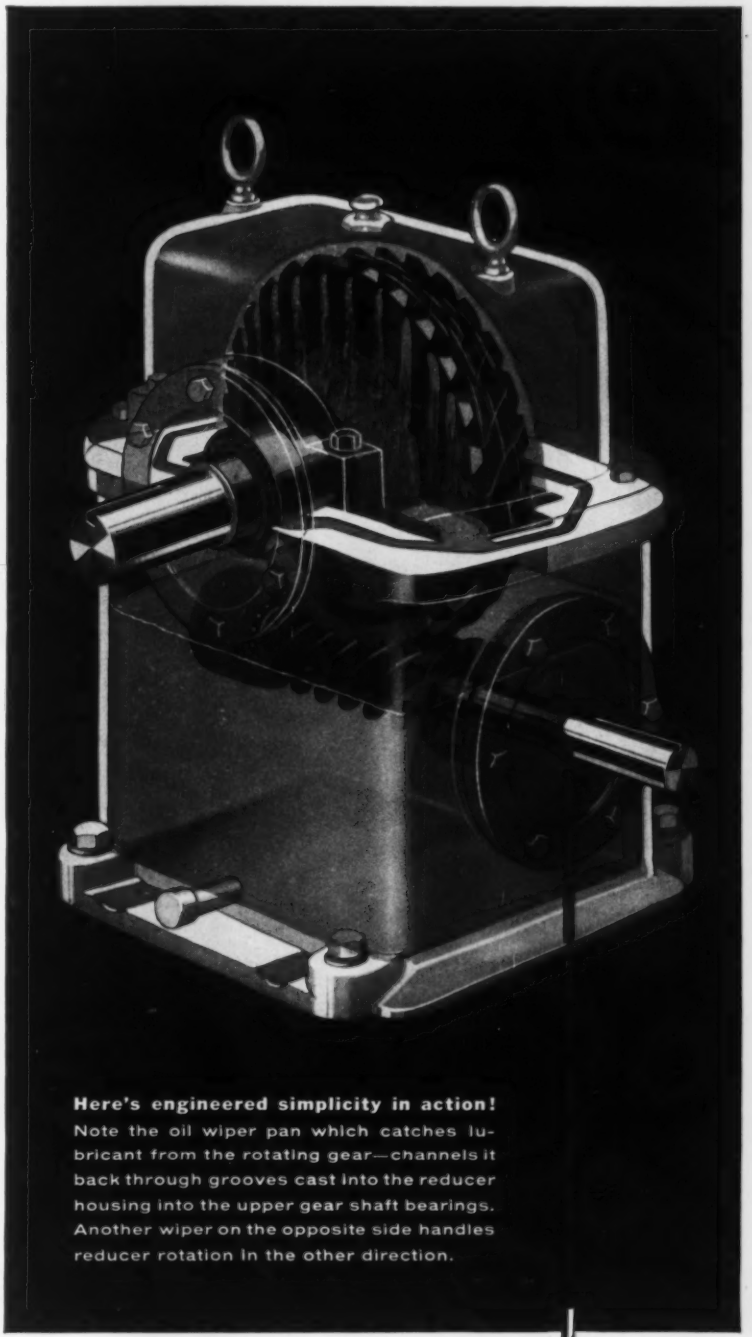
Here's one reason why many Cleveland Worm Gear Speed Reducers have provided trouble-free operation day in-day out for over 42 years.

The secret is continuing, adequate lubrication of Cleveland's case-hardened steel worms meshing with low-friction bronze gears. If reservoir is kept filled with good, clean oil, lubrication can never fail.

To get the complete "Cleveland Story", ask for your free copy of our new Bulletin 145. The Cleveland Worm & Gear Company, 3270 East 80th Street, Cleveland 4, Ohio.



Here's engineered simplicity in action! Note the oil wiper pan which catches lubricant from the rotating gear—channels it back through grooves cast into the reducer housing into the upper gear shaft bearings. Another wiper on the opposite side handles reducer rotation in the other direction.

Affiliate: The Farval Corporation. Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

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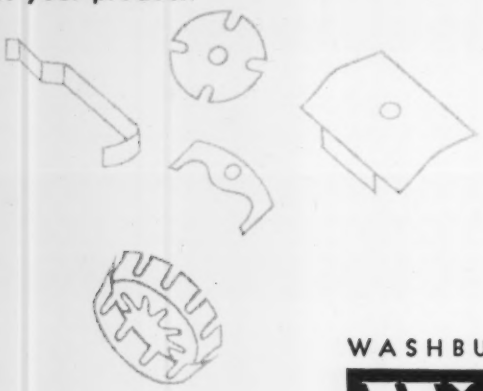
has over fifty years of experience in solving spring steel problems, to guarantee the quality of your product.



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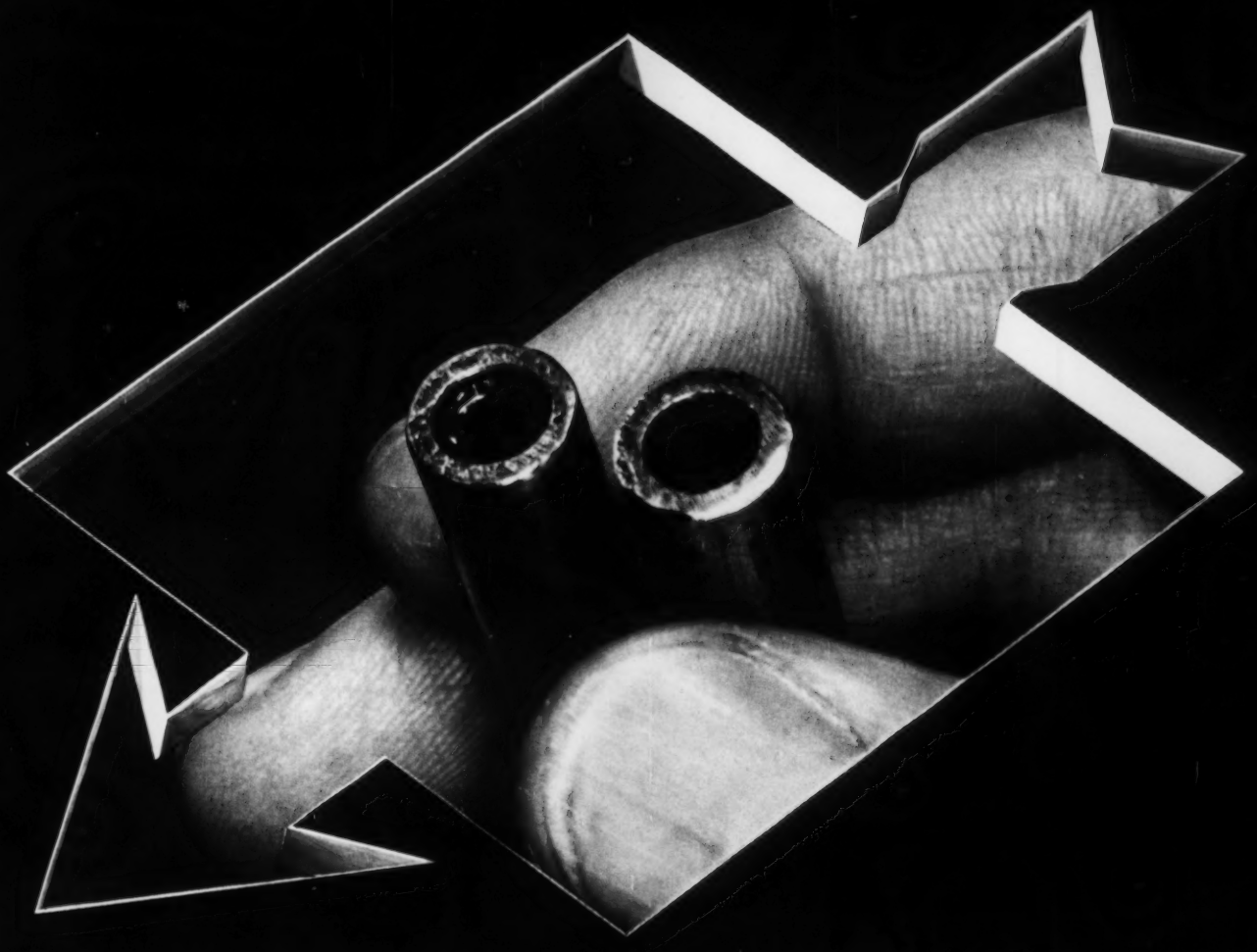

Two oils...two lines...one clogged...one cleaned

A Sunvis 700 oil and a regular oil were run through two equally clogged hydraulic lines. The regular oil couldn't remove the sludge. The Sunvis 700 oil cleaned its line thoroughly. That's one job it's made for . . . to clean out sludge deposits in hydraulic lines while it transmits power.

With a Sunvis 700 oil—like every Sunoco oil—you enjoy the best economy of all: the economy of quality. A Sunvis 700 oil lasts longer. The machinery it protects lasts longer. It prevents rust . . . ups output by reducing downtime.

FREE Trouble-Shooting Chart will help you spot and cure common hydraulic system troubles. For your copy, write to:

Sun Oil Company, Philadelphia 3, Pa., Department I-12.

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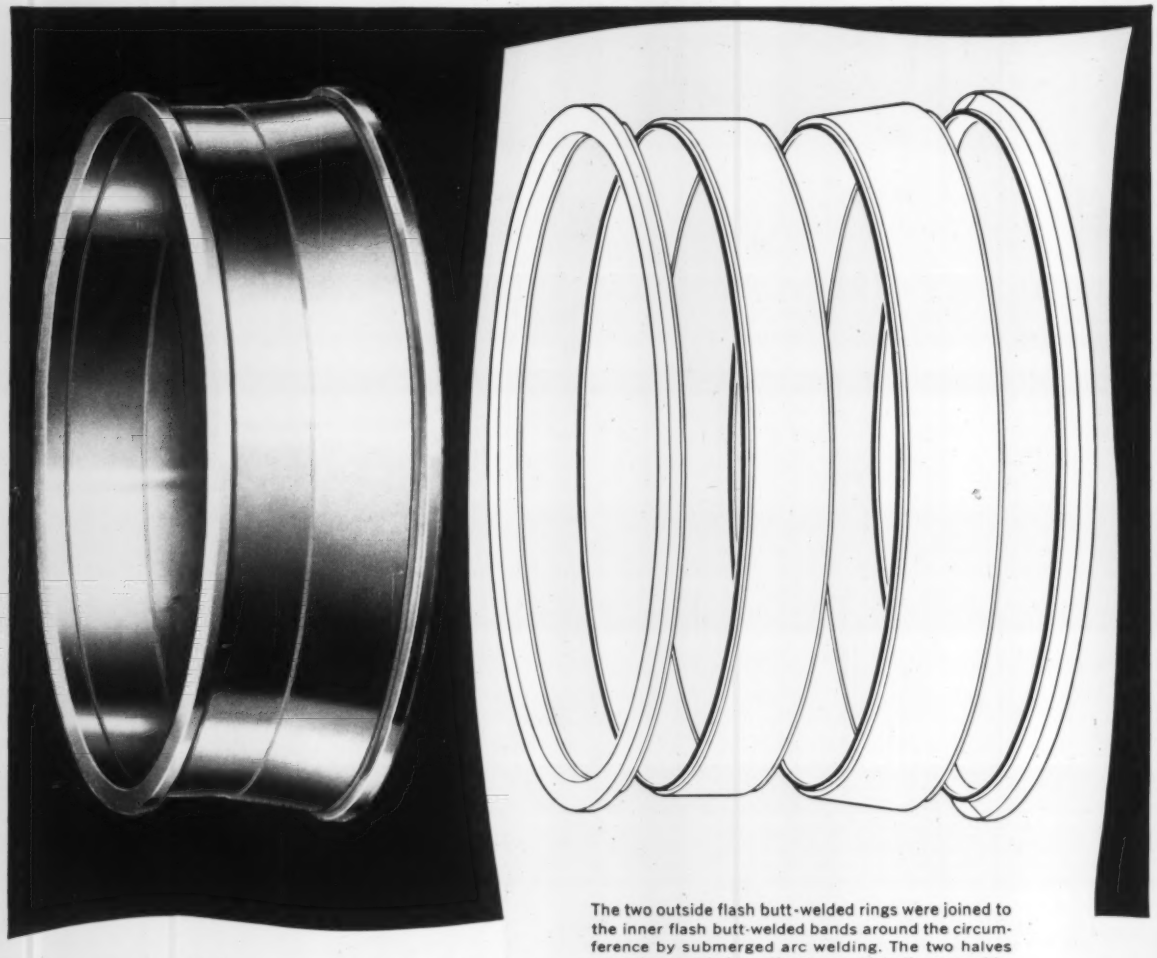

The two outside flash butt-welded rings were joined to the inner flash butt-welded bands around the circumference by submerged arc welding. The two halves were then welded together to complete the assembly.

Tricky

Welded Fabrication Cuts Cost of this Precision Assembly

To reduce material and machining time, Amweld® produced this 340 lb. turbine casing as a 4-piece welded assembly. Four flash butt-welded rings were joined together by submerged arc welding. The material used was AMS-5723, a high temperature alloy. Amweld's know-how, gained from fabricating hard-to-weld metals, enabled their engineers to develop a satisfactory technique for producing these aircraft components in quantity. The result – assemblies which met all specifications – and a substantial reduction in cost for a large manufacturer of aircraft engines.

If you would like to obtain complete information on the capabilities of American Welding and how we can be of assistance to you – phone or write today. Our local representative will be happy to call and discuss your requirements.

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AMERICAN WELDING

Economist Predicts Steel Wage Settlement at 8 Cents

Steelworkers are likely to settle for a basic wage increase of about 8 cents an hour this year, strike or no. That's the opinion of Princeton University's Prof. Richard A. Lester. He reasons that in an upswing year, Dave McDonald will feel compelled to go after more than Walter Reuther's autoworkers got in a recession year (about 6 cents). He also claims that public and Congressional pressures have put the steel negotiations within limits that may make impossible a wage settlement without a strike (Page 30).

Union Organizing Drive Coming

Look for the AFL-CIO to launch the biggest recruiting drive in its three-year history. Labor leaders think that the taint of racket scandals is wearing off and that the climate is once again good for membership campaigns. The union's executive council has voted to raise $750,000 in the next six months for organizing. Method: Increased contributions from member unions. One target: Whitecollar workers.

McDonald Sounds Off on Demands, Steel Costs, Imports

Here's about what United Steelworker President David J. McDonald wants in his new contracts with the steel industry to be negotiated this summer: Some 11 or 12 cents in direct wage increases, shorter hours without reduced pay, cost of living increases granted since 1956 written into the base rate, liberalized Supplemental Unemployment Benefits (Page 31). Mr. McDonald charges industry's import fears and claims of labor-induced spiraling costs are nothing but a "smoke screen" to hide the facts.

Effective Labor Reform Unlikely

Expect any labor reform bill passed by Congress this session to more closely resemble the one offered by Sen. John F. Kennedy (D., Mass.) than the 20-point plan offered by President Eisenhower. The AFL-CIO is formally

backing the Kennedy bill; it'll fight Ike's proposals to ban secondary boycotts and "blackmail" picketing.

Meet Conrad Cooper, Steel's Bargaining Chief

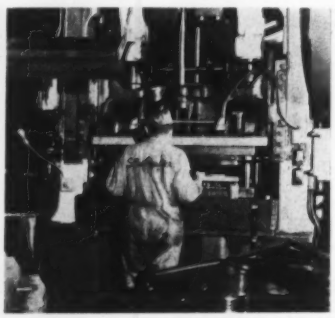
Meet Conrad Cooper, who will be chief of the steel industry's contract negotiating team, when it meets with the steel union in New York next May. The U. S. Steel Corp. executive is considered "a tough bargainer" by labor men, some of whom think he's dictatorial. But others concede that "he always goes in a straight line, never deviates" (Page 32). Other members of Mr. Cooper's bargaining committee will be R. H. Larry of U. S. Steel, John Morse of Bethlehem Steel Co., and H. C. Lumb of Republic Steel Corp.

Bulletin F Revision May Be Buried

A revision of Bulletin F (the long awaited redo of the government's schedules of useful lives needed in depreciation calculations) has been completed by a committee working for the Treasury Department. But it may never be released. Treasury is reported to be considering sending legislation to Congress for depreciation reform this session (STEEL, Mar. 2, p. 69). While the matter is under consideration, Bulletin F will be held up. If reform is passed, Bulletin F perhaps would not be needed, or the present revision would not be adequate under the new law.

Prospects for Stampers Brighten

Hedge buying against a possible steel strike is giving the stamping industry an outstanding first quarter; business this year is expected to be 10 per cent above 1958's. One factor that's helping contract shops: The mortality rate of captive shops. Stampers look for price relief this year. Sharp competition has held rates to the 1957 level; they hope to pass rising steel costs along to buyers (Page 29).

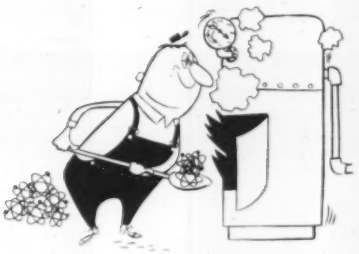


Oxygen Use To Rise in 1959

Look for U. S. oxygen production to exceed 80 billion cu ft this year, vs. about 60 billion in 1958. So predicts William M. Haile, president of Union Carbide Corp.'s Linde Co. With all the publicity about oxygen in steelmaking, you may forget that welding uses are gaining, too. He predicts

Linde's distributor sales of oxygen, other industrial gases, and apparatus will rise 8 to 10 per cent above last year's.

How Good Is the Atomics Business?



The atomic energy industry has failed to develop as predicted five years ago. Now its rate of growth is hanging in the Congressional balance. Towering costs are keeping business from buying nuclear control devices, and the AEC, trying to live within the budget, can't push a bigger civilian power program (Page 44).

German Steel Output Off in '58

German production of pig iron, ingot steel, and finished rolled steel fell off in 1958. The industry operated at 80 per cent of capacity, down from 95 per cent in 1957. Comparisons: Pig iron output was 16.7 million tons, vs. 18.4 million tons in '57; ingot steel, 22.8 million tons, vs. 24.5 million tons in '57; finished steel, 15.2 million tons, vs. 16.4 million tons in '57. About 85 per cent of German steel output is used domestically.

Reactive Metal Furnace Eliminates Cooling Hazard

STEEL gives you a look at a new concept in vacuum arc melting for reactive metals such as titanium. A heavy skull is maintained in the crucible. It acts as a heat sink, handling the heat generated during melting. Costly cooling systems are not needed; and there is no danger of water-reactive metal explosion. The furnace can be used for semi-continuous production (Page 64).

Putting the Directors To Work

Corporate directors are beginning to roll up their sleeves and exercise active management in the boardroom, a study by National Industrial Conference Board shows. Increasingly, directors are being selected for their specialized knowledge and the amount of help they can give to operating executives, reports the NICB. Nearly a thousand industrial and commercial firms, two-thirds of them manufacturers, participated in the study. The trend among them shows that board members are spending less time on routine reports and reviews of assets; they're devoting more time to consulting company officers on management problems. To attract qualified men, many firms are paying higher director's fees. They're trying to develop balanced

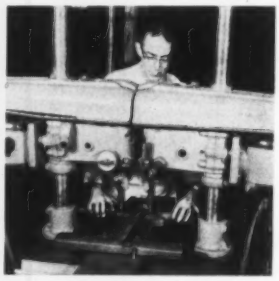
boards representing company management, outside interests, and experts in general management.

Volkswagen Predicts European Mergers

Manual Hinke, export manager of Volkswagenwerke, Wolfsburg, Germany, says that mergers of European automakers in future years will produce a group of several ruling companies, similar to the U. S. pattern. He predicts the unions will be prompted by competition stemming from higher production and the Common Market. Mr. Hinke says Volkswagen is likely to affiliate with German or European companies now producing medium and higher priced cars to enable the state administered firm to compete at different price levels.

Extra Miles from Your Machines

Special setups of standard machines may help you on production jobs. A builder of drill presses has found some unusual ways to put the machines to work (Page 68). In addition to the normal jobs, the company is using the machines for routing, milling, and other work normally done with different types of machines. Results: The drill press becomes a more versatile production tool.



RCA Officer Warns of Lag in Knowhow

Dr. Douglas H. Ewing, vice president of Radio Corp. of America, told RCA Institute graduates that the U. S. is suffering from "unplanned obsolescence" in technical skills. He cited what he termed "an alarming gap" between those who work at the frontiers of science and the technical understanding of the layman. Dr. Ewing said it is increasingly difficult to keep our technical knowhow abreast of modern scientific progress; he called on technical personnel to recruit others in scientific training.

Straws in the Wind

A new aluminum tank for pole-type distribution transformers has been developed jointly by Westinghouse Electric Corp. and Reynolds Metals Co. The tank has extruded aluminum fin sections and ribs . . . World steel production was 301 million net tons in 1958, down from 322 million net tons in 1957, says the Commerce Department. Red China claims to have more than doubled production last year; only France and the USSR recorded gains among other major producers . . . Harry B. Benford, naval architect at the Univeristy of Michigan, recommends that the U. S. Army Corps of Engineers design the new lock at Sault Ste. Marie to handle ore carriers up to 1100 ft long.

What's New

IN STEEL FROM STOCK

New developments will help give you Increased Value in Buying Metals from Ryerson during 1959. Below are just some of the new additions to Ryerson's comprehensive stocks and services.

NEW FASTER MACHINING TUBING...Ledloy® 170—fastest machining steel tubing ever produced, average speed of 170 s.f.m. And only Ryerson has it for shipment from stock. Users report increases of 25% in productivity... longer tool life...improved finish. Sizes available to date from 1" to 2½" O.D. with maximum ⅜" wall thickness.

NOW EVEN FASTER MACHINING LEDLOY BARS...new Ledloy 375 bars boost machinability to record averages of 375 s.f.m. Large stocks of this new steel supplement Ryerson stocks of regular Ledloy 300 free-machining steels to give you widest selection. Available from Ryerson stocks in rounds from ¼" to 1", hexes from ¼" to ⅝".

TWO NEW PLANTS IN TEXAS...the former plants of Vinson Steel and Aluminum Co. in Dallas and Houston are now a part of the Ryerson organization. These plants, already well stocked and equipped, are now backed up by the unequaled facilities of the 18 other Ryerson plants across the nation. This means Texas metal users can now draw on stocks of more than 12,000 kinds, shapes and sizes of steel and aluminum. Also available, full line of industrial plastics and metalworking machinery.

NEW ALUMINUM STOCKS...are being added in Ryerson plants at Cleveland, Philadelphia and Los Angeles. Aluminum stocks at other Ryerson plants have also been greatly expanded.

NEW STOCKS OF T-1 ALLOY PLATES...in two types: to 321 minimum BNH and to firebox quality specs. "321" gives maximum resistance to impact and abrasion. Five sizes available from 3/16" through ⅝". "Firebox" is for applications requiring high strength and toughness...meets ASME code case 1204-3 for pressure vessels. Available in nine sizes from ¼" through 2". Both types offer good weldability.

STAINLESS EXTRUDED ANGLES...now available from Ryerson. They offer better surface and resultant lower polishing costs...cross-section tolerances less than half those of rolled angles for better forming into rings...no increase in price over rolled angles.

INCREASED VALUE IN STAINLESS FROM RYERSON...even though your application may not demand it in every case, you get the ultimate in specification controls when you order stainless from Ryerson—an important increased value without increased cost. Examples: in addition to chemistry specs for Types 304 and 316, you get the added value of controlled mechanical properties and Brinell hardness—and corrosion resistance assured by actual test.

STAINLESS HEADS—NATION'S LARGEST STOCK BY FAR...Ryerson stocks now include every requirement for ASME flanged and dished heads in Types 304, 304L, 316 and 316L in a wide range of gauges and sizes.

RYERSON CERTIFIED QUALITY

RYERSON STEEL®

Member of the INLAND® Steel Family

NATION'S MOST COMPLETE SERVICE ON STEEL...ALUMINUM...PLASTICS...METALWORKING MACHINERY

SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

DSC PORTSMOUTH LPR COILS

Each Coil a Self-Contained Cost-Reduction Program, Including a Built-in Materials Expediting System to Help Bright Wire Fabricators Reduce Man-Hour Costs.

How a Customer's Complaint Only Served to Re-emphasize LPR Advantages

ORDER ACCEPTED UNDER PROTEST — Our wire mill accepted an order recently "under protest." It was for a carload of **.500"** Bright Wire in **2,000 pound** LPR's. Why the protest? They were skeptical of the capacity of our equipment at the time for such heavy wire in such big bundles.

TROUBLE — Sure enough, their misgivings proved correct. To complete the order, therefore, we had to include a sprinkling of "light" coils. These weren't so "light" either. Actually they averaged 1,545 pounds per coil, *but they were short of 2,000 pounds.*

THEN CAME THE STORM — On arrival of the shipment the customer complained righteously. Here's the gist of the "lecture" a DSC "Rep" received:

- "You know darn well our production standards have been set up for 2,000 pound coils."
- " 'Light' coils like these are bound to jump our downtime, lose us production and raise Cain with our costs."
- "What's more, with the 2,000 pound coils we cut our previous coil remnant scrap losses by 86%. With these 'light' coils those savings will go down the drain."
- "So don't ever forget—*we just can't tolerate 'light' coils.*"

POSTSCRIPT — *Heavy enough equipment has now been installed so we can properly produce 2,000 pound LPR's of ½" Bright Wire.*

A BIT OF BACKGROUND — Up to 1957 this customer had used nothing but 300 pound coils. That year, after resolute resistance, they agreed to switch to 2,000 pound LPR's. (Their top size initially was .375", later increased to .4375", and again recently to .500".)

THE LESSON — You won't "tolerate" traditional weight coils (under 600 pounds) either—once you begin using DSC Bright Wire in LPR coils (available in single length bundles up to about 4,200 pounds depending on carbon content and wire size).

IT'S YOUR MOVE!

How about a taste of LPR economy and efficiency on your own Bright Wire jobs? Quick action and complete information yours from your nearest DSC "Rep" office or from Sales Headquarters at Detroit 9, Michigan.

Customer Satisfaction Is Our No. 1 Job

DETROIT STEEL CORPORATION

GENERAL SALES OFFICE, DETROIT 9, MICHIGAN

CUSTOMER "REP" OFFICES:
Charlotte, N. C., Chicago, Cincinnati, Cleveland, Columbus, Ohio, Dayton, Ohio, Detroit, Grand Rapids, Mich., Hamden (New Haven), Conn., Houston, Texas, Indianapolis, Jackson, Mich., Louisville, Ky., Milwaukee, Wis., New York City, Rochester, N. Y., St. Louis, Toledo, Worcester, Mass.

The PROOF of DSC STEEL is in its PERFORMANCE on Your Job

DSC PRODUCTS: Coke . . . Coal Chemicals . . . Pig Iron . . . Basic Open Hearth Steel Ingots, Blooms, Slabs, Billets, Rods . . . HR and CR Sheet and Strip . . . Flat CR Spring Steel . . . Manufacturers' and H.C. Specialty Wire . . . Welded Wire Fabric

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New Boom in Steel!

Another chapter in the story of the fantastic growth in steel is about to be written. It is a story you will want to watch unfold as a guide in your planning.

In the last 20 years, the steel industry has expanded in waves. The first wave was induced by World War II. Obsolete and uneconomical capacity was promptly junked when the war ended. Then a postwar boom, instead of an anticipated depression, brought another wave of expansion. The Korean War came along to bring the biggest wave of all. Even so, the country did not have enough capacity, so we had the current wave of the late 1950s. This is the way it happened:

		Million Tons
World War II expansion	1938-44	+15.3
Capacity abandoned	1945-46	− 4.3
Postwar expansion	1947-50	+13.0
Korean War	1951-55	+24.2
Current expansion	1956-59	+19.7

In 22 years, U. S. steelmaking capacity will have increased 67.9 million tons—from 80.2 million on Jan. 1, 1938, to an estimated 148.1 million on Jan. 1, 1960.

Will 148.1 million tons of capacity be enough?

Based on a population of 178 million and capacity of 147.6 million tons on Jan. 1, 1959, the steel industry can make 1660 lb per capita. Since production in 1959 is expected to be no more than 110 million tons, or 1235 lb per person, it looks as though present capacity is ample for some time.

But steel industry planners know that is not true for two reasons: Growth in per capita consumption and population.

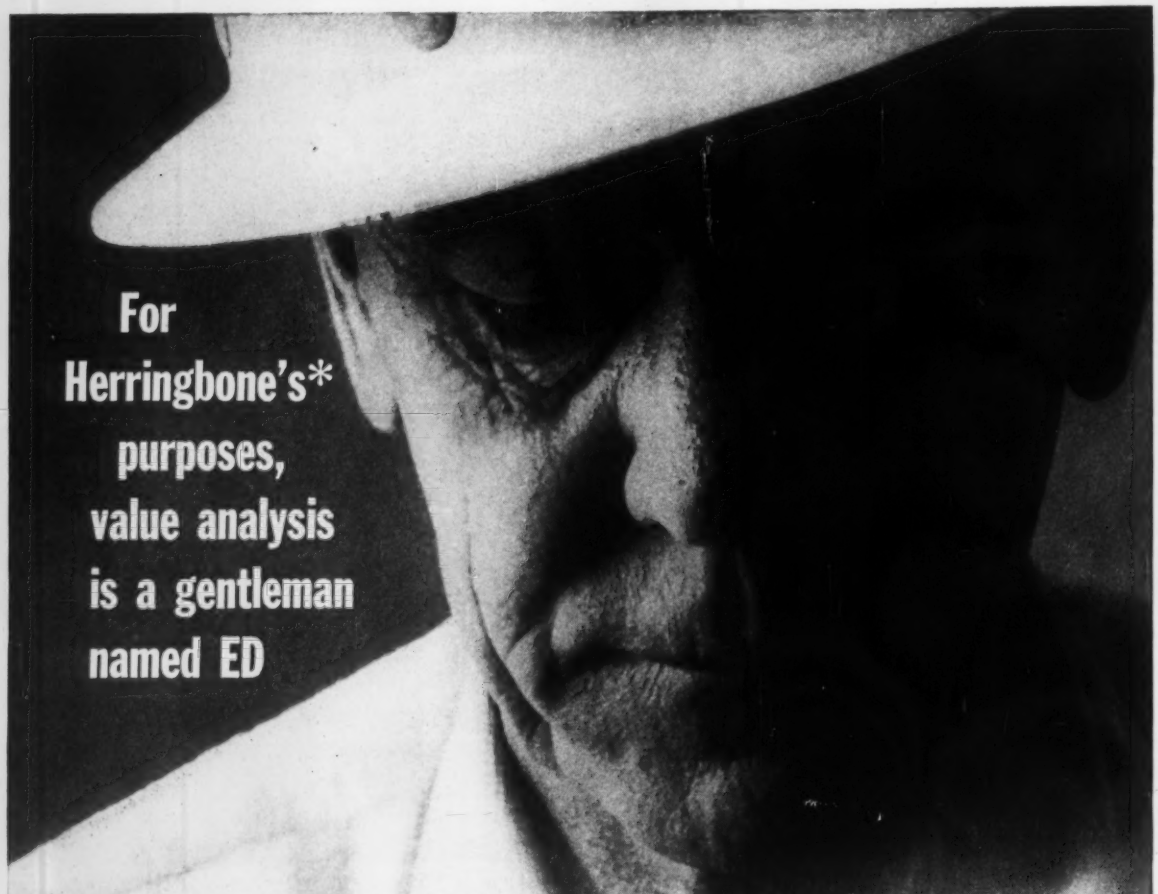
One company is spending $300 million on a new program; two are spending $200 million each; another is spending $75 million; and two others are spending $50 million each. Plans and sites for several more programs are ready.

Based on a population of 244 million and consumption conservatively estimated at 1600 lb per capita, the steel industry will need to add 47.1 million tons of capacity by 1975. The cost will be not less than $16.5 billion.

So the steel industry is off on what may be a new boom running into the 1960s and 1970s.

Irwin H. Such

EDITOR-IN-CHIEF



For Herringbone's* purposes, value analysis is a gentleman named ED

Or Joe, or Sven, or whatever the name of the man is in your organization whose opinion on wire rope you most respect. You can take all the value analysis forms ever made and fill them out and get some pretty promising answers. The straightest and clearest answer you'll ever get is from the head gentleman who *works* with the rope; the same man who comes back to you and tells you that the rope he works with *doesn't work*.

We take this stand because the new Roebling Herringbone is championed by men who work with it – the first to feel the impact of a wire rope's success or failure – and the first to tell you about either.

Roebling Herringbone–the two-ropes-in-one rope–is doing things that construction operators find hard to believe–but love to admit. It has prompted a series of some of the nicest testimonials you ever saw.

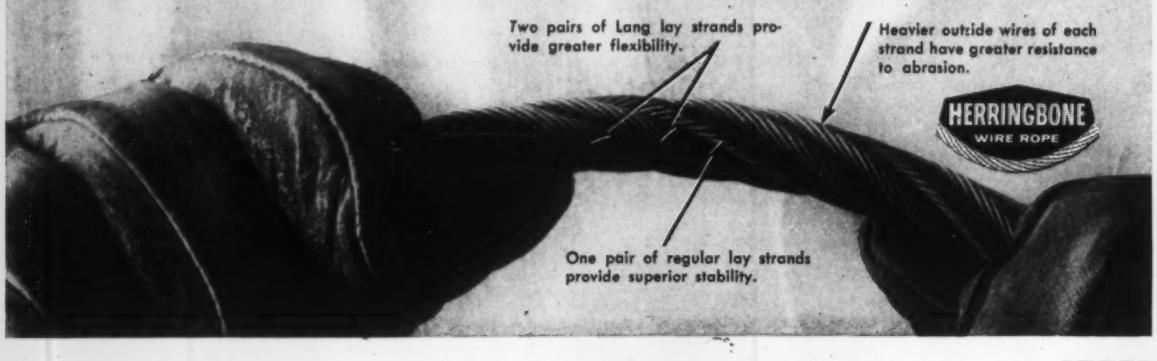
When you come right down to it, their satisfaction is twofold; after all they are working with both a Lang lay and regular lay rope in one. So they are getting the best that both types of rope construction have to give ... and that's plenty.

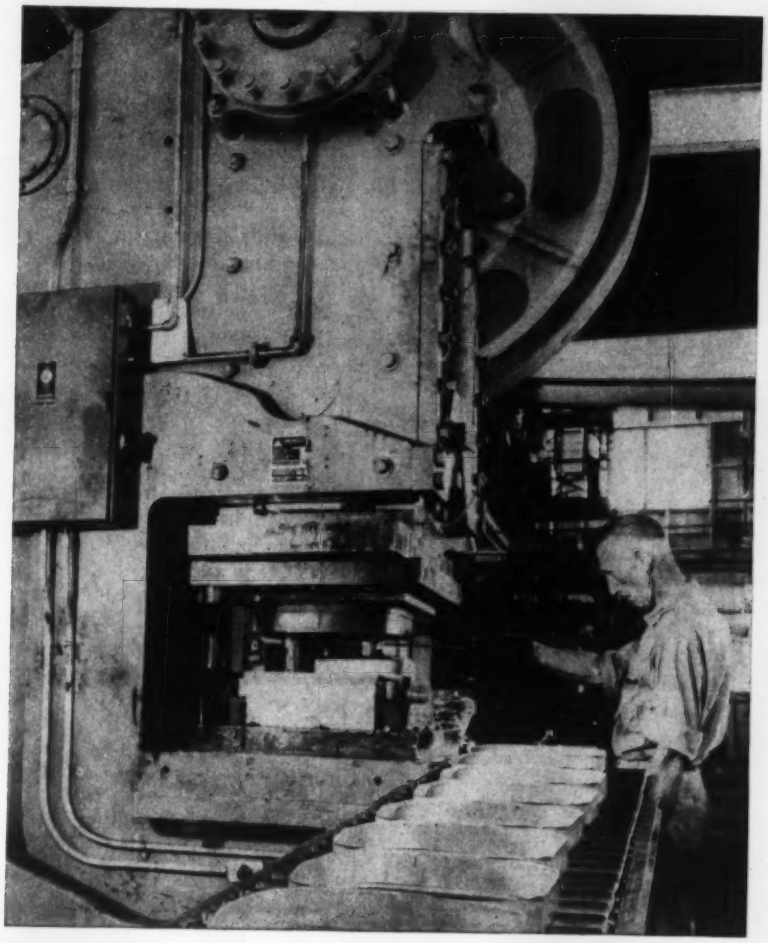
If you want to write us and get some pure, unadulterated field reactions, opinions from men who count, just drop a line to Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey. With these, we'll take the liberty of sending you the complete information on the rope that makes value analysis a sure thing by the mere specifying... Roebling Herringbone.

*Reg. Appl. For

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation


Two pairs of Lang lay strands provide greater flexibility.
Heavier outside wires of each strand have greater resistance to abrasion.
HERRINGBONE
WIRE ROPE
One pair of regular lay strands provide superior stability.



O. Ames Co. and Jones & Laughlin Steel Corp.

Bellwether Stampers See Steady Business Upturn

AS AN INDICATOR of metalworking activity, the stamping industry is showing a lot of early strength; prospects are for a 10 to 15 per cent improvement over last year. The uptrend is broad geographically, with a few soft spots between New England and Minnesota.

Many job shops in the East look for a good year. One enjoyed a 50 to 60 per cent pickup in orders this quarter. In Ohio, another contract shop reports bookings are "way up." It has just completed the biggest three months in its history. But a Minneapolis plant reports the outlook only "a little brighter." Buyers are doing a lot of shopping, no buying.

The pickup is right in line with predictions made last year (STEEL, June 2, 1958; p. 105). Stampers, then at the bottom of a 35 to 50 per cent slump from 1957, looked for a rise in the fourth quarter—real health by January.

• **Who's Buying**—Stampers with mounting backlogs credit much of the ordering to hedge buying prompted by an expected steelworkers strike in June. One executive says he will have laid in three times his normal steel inventory by May. One auto supplier says the carbuilders are hedging; he has started tooling up for small car parts orders.

Worcester Pressed Steel Co., Worcester, Mass., has bought more steel since December than it did in the first six months of 1958. Folke A. Erickson, general sales manager, says orders represent a cross section of customers, from missile and aircraft plants to the marine and boating industry. Widespread shopping inquiries by both the government and consumer product makers (mixers, blenders, home appliances), presage a promising second half.

• **Price Squeeze**—Stampers report prices have not improved noticeably over the 1958 level; they hope for an increase in the second half. They have not been able to pass rising steel costs on to their customers and report that industry pricing is still "extremely competitive."

Labor requirements are edging up slowly as the upturn gains momentum. Of employers queried by STEEL, most indicated an employment increase of 2 to 5 per cent. At least one manufacturer is back to "normal" employment levels.

• **Major Factors**—The ratio of contract shop volume to captive volume is undergoing considerable change, say industry sources. While it's hard to generalize, manufacturers say that automotive and electronics captives are growing; in the consumer appliance field, they are declining.

Two views are clear: Harold A. Daschner, managing director of the Pressed Metal Institute, feels that

captive establishments are being abandoned as users review the vital make-or-buy decision and turn their floor space to more profitable uses. Clement C. Caditz, president of Northern Metal Products Co., Franklin Park, Ill., travels widely through the industry; he says the high attrition among captives is being reflected in increasing job shop volumes.

Mr. Caditz also says that a surge in new tooling purchases in the last few weeks probably spells an upturn in new product introductions, since recent practice has been to modify product designs, then rework the old tooling.

German Autos Up 25%

West German auto production spiraled 23.3 per cent in 1958. The nation retained its position as the world's largest automobile exporter and second largest producer. In making over 1.5 million vehicles, it more than doubled the increase of 1957.

Exports zoomed 25.5 per cent, totaling 733,100 units, compared with 584,000 the previous year. Exports accounted for 49 per cent of production.

Germany's "Big Four" include Volkswagenwerke GmbH (Volkswagen), Daimler-Benz (Mercedes-Benz), which acquired Auto Union (DKW) last year, Adam Opel AG (Opel), GM's subsidiary, and Ford Werke AG (Taunus), Ford's German plant.

Nuclear Ship Being Built

Mallinckrodt Nuclear Corp., St. Louis, is shipping enriched uranium oxide to the Babcock & Wilcox Co., New York, for use in the nuclear merchant ship, *N. S. Savannah*. B&W will supply the nuclear propulsion system, including the reactor. The ship represents the efforts of the Atomic Energy Commission and the Maritime Administration. New York Shipbuilding Corp. is the hull contractor.

Scaife Adds Kellogg Line

Scaife Co., Oakmont, Pa., has taken possession of the air compressor line of Kellogg Div., American Brake Shoe Co., Rochester, N. Y. It will be operated as Kellogg-American Div., Scaife Co.

Peaceful Steel Settlement?

Probably not, says Princeton's Prof. Richard A. Lester. Public and Congress have backed contestants into a corner. Workers will get 8 cents an hour, strike or no, he says

"THIS YEAR'S settlement in steel will not be more than a couple of cents better than last year's settlement in autos, whether there is a steel strike or not," says Prof. Richard A. Lester, Princeton University.

But he adds: "Publicity, past complaints, and Congressional investigations—to say nothing of threatened investigations—have tended to put the steel negotiations within limits that may make impossible a wage settlement without a strike."

• **Careful Analysis Needed**—Professor Lester told the Associated Industries of Cleveland last Thursday that the issue of wage-price inflation is sure to be the center of conflict when negotiations for a steel labor contract begin in New York on May 20 or 21. He feels there is a tendency to simplify the matter by laying the credit—or blame—at the doorstep of the unions. "It just won't do to say the wages have risen faster than productivity and that unions are responsible for the price rise. Wages have risen faster than productivity in all inflationary periods.

"In all countries, except a few like Germany and Switzerland, prices have been rising faster than they have in the U. S. . . . Other factors, such as the cold war, farm price supports, rising taxes, political pressures for full employment and against monetary restraints, and rapid technological change are much more important (than union-management negotiations) in determining broad movements in the price level," he contends.

RICHARD A. LESTER

• **Villain in 1956**—Professor Lester feels the industry paid too high a price in ending the 1956 strike. "But the villain in the wage-price spiral, in part, has been the long term agreement, and we can't have the advantages of such agreements, in terms of stability of relationships and reduced loss from work stoppages, without paying the cost in terms of upward pressures on prices."

That agreement gave workers an automatic improvement in wages and cost-of-living increases totaling about 8 cents an hour in 1958 during the sharpest recession of the postwar era and set the standard for auto negotiations last year.

• **Which Comes First?** — "It has been said that the steel negotiations will set the pattern this year. But in a real sense the long term agreements that do not expire this year, especially those renegotiated last year, will largely establish the pattern," he declares. The steel union will feel compelled to get more in a recovery year than the auto union got in a recession." (Auto workers got an annual improvement of 2½ per cent of base pay or 6 cents an hour.) He points out this has been the case in every year since 1954. Average hourly pay in both industries was equal then, but by the end of 1958, the steel industry's average was more than 40 cents ahead of the auto industry's.

The importance of this pattern can be seen from the fact that half of the large agreements (covering 5000 or more workers) expire this year.

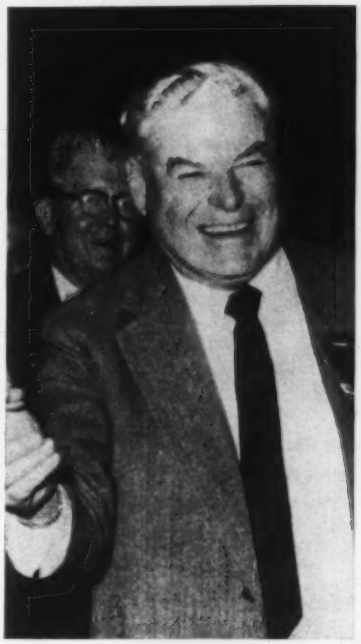
McDonald Sets Steel Demands High

"I WISH Senator Kefauver would learn to keep his nose out of my business," snapped David J. McDonald, president, United Steelworkers, at a Pittsburgh press conference.

Mr. McDonald popped off when asked about a proposal made by the senator: The steel industry should forego a price increase if the steel union limits its wage demands to an amount equal to the average increase in productivity.

Asked if American labor was pricing itself out of world markets, Mr. McDonald retorted: "Absolutely not. That's just a smoke screen put up by industry to make the steelworkers dissatisfied with their union."

He also stated the declining margin of exports over imports was not unusual. It happened during the 1954 recession. "If all the steel being imported were made in the U. S., over 99 per cent of the workers now unemployed would still be out of work," he said.



David J. McDonald, United Steelworkers' president, says industry must face up to the need for a shorter workweek to provide full employment

• **Demands Full Employment**—Mr. McDonald, who is ready to negotiate "tomorrow" for shorter hours and higher wages, declared: "We must have full employment in steel. Only people have purchasing power. Industry will eventually have to face up to the need for a shorter workweek if we are to have full employment."

• **No Compromise** — Would the USW agree to moderate its demand if industry promised to hold the line on prices?

Mr. McDonald's reply: "I think we got caught on that one in 1948. We won't fall for that again."

He still favors his extended leave proposal. Workers would get three months' paid vacation after five years' service. They'd also get normal paid vacations during the five years. Such a program is used in Australia. The USW president figures an extended leave program would cost industry no more than 12 cents an hour and would create 25,000 to 30,000 jobs.

It would cost less than the short workweek, he said. Example: If a steelworker gets $3 an hour for a 40 hour week, that's $120. If he works 36 hours for the same $120, the hourly rate jumps to $3.33.

On other specific demands that the union might make, Mr. McDonald was more cautious. But some sources indicate that he'll ask that the 17 cents paid as cost-of-living increases since 1956 be written into the base rates this year. That's not as simple as it sounds; it creates wage inequities. Add 17 cents to the hourly rate for each classification, and you flatten the scale. To preserve the current relationship, the spreads between job classes would have to be widened. So the 17 cents would actually cost about a quarter.

• **Steel Strike?** — Mr. McDonald said it's traditional that his people do not work unless they have a contract. But there have been extensions. One may come when the present contract expires June 30, he added. He remarked that the size of steel inventories in consumers' hands will affect negotiations.

Commenting on an estimate by Roger Blough, chairman, U. S. Steel Corp. (a 1 cent increase in hourly wages would eventually cost industry $30 million a year), Mr. McDonald claimed: "Another example of the smoke screen. In December, we had 450,000 steelworkers employed in production and maintenance. If you figure 2000 hours a year for each man and multiply by a penny, that's $20 per man. Then multiply by 450,000 and you get $9 million, not $30 million."

Mr. Blough's calculations are more detailed than Mr. McDonald's. Every penny pay boost adds $15 million to direct employment costs because of the wage hike, higher overtime expense, built-in factors, such as greater social security payments, and other reasons. Mr. Blough also points out, as similar wage boosts in other industries are reflected in such items affecting steelmaking as purchased goods, services, and taxes, the indirect steel employment costs soon mount to another $15 million.

• **Blasts Industry**—Pinpointed on the import situation in barbed wire, plates, bars, and tubes, the USW chief cited the barbed wire case as "talk being generated by a few producers." He continued: "They've brought the trouble on themselves because: 1. They haven't kept pace with improved technology of European producers. 2. They aren't using as good equipment. 3. They've raised their prices to exorbitantly high levels. 4. The Europeans are making steel for barbed wire by the bessemer process which is cheaper. 5. American firms are doing all this importing." But he claims that foreign wire isn't as good and won't last as long as ours.

"Is America to be deflated to the economy of the thirties?" Mr. McDonald asked. "Has anybody stopped to consider which is a greater calamity to the people of this great and dynamic nation—the high cost of living or the high cost of want?"

"It seems evident that we are well on the road to becoming noncompetitive with foreign industries."

"From 1940 through 1957, total employment cost per manhour at U. S. Steel rose 8 per cent per year compounded annually."

Meet New Bargaining Chief for Steel:

CONRAD COOPER was noted for his ability to hold the line when he played football.

As chief negotiator for the steel industry in this year's contract talks with the United Steelworkers, he'll try to hold the inflation line, one of the toughest assignments of his career.

An executive vice president of U. S. Steel Corp. (personnel services) since February, 1958, Mr. Cooper succeeds John A. Stephens as the industry's chief bargainer. Mr. Stephens, former USS vice president in charge of industrial relations, was chief negotiator from 1943 to 1956, when the three year contract expiring June 30 was signed.

• **No Newcomer**—Mr. Cooper has been solving problems in industrial engineering and labor relations since 1929. Shortly after graduation in 1926 from the University of Minnesota he went to work as a field engineer for Universal Portland Cement Co., a U. S. Steel subsidiary.

From 1929 to 1937, he worked for a New York consulting firm which helped companies evaluate jobs, improve methods, and install incentive systems. In 1936, he went to Wheeling Steel Corp. as assistant to the vice president in charge of operations. Three years later, he became assistant vice president. In his Wheeling tenure, he faced John L. Lewis in coal negotiations.

• **Biggest Achievement**—In 1945, U. S. Steel hired him as assistant vice president in charge of industrial relations. He sat in on the 1945 contract negotiations and he began the task for which he is best known today: Direction of an industry committee which sought to eliminate wage inequities. Working for two years with representatives of the USW, Mr. Cooper and his associates compiled a manual of job descriptions and reduced 1000 jobs to 32 classifications. In 1947, they tackled the second part of their assignment—elimination of inequities on incentive jobs. It was a five year struggle. "We never did agree on how measurements should be made," Mr. Cooper recalls. "In 1952, we reached a compromise that allowed the companies to set up incentives but permitted the union to challenge them."

Mr. Cooper participated in the contract negotiations of 1947, 1949, and 1952. He was appointed vice president-industrial engineering in 1948 and vice president-administration planning in 1955. He was not involved in the settlements of 1954 ("There was no need for my direct participation") or 1956 ("I had a different job that year").

• **Strong Personality**—At 55, Mr. Cooper is big and solidly built. He apologizes if he has to give a long answer. ("I didn't mean to make a speech.") Like most engineers, he has a high regard for facts and a no-nonsense approach to problems. In bargaining sessions, he puffs on a cigar until his opponents quit talking, then makes an offer.

Union leaders have a high regard for his ability. They have coined the word, "Cooperized" (lulled into

"During this same time, our shipments of steel products per manhour rose 2.4 per cent per year compounded annually."

"Since 1950, the American steelworker has received more in wage increases than his German counterpart gets in total wages."

R. C. Cooper

believing that concessions are being granted). Never a word mincer, he impresses some labor officials as dictatorial. Others like his approach. Says one: "He always goes in a straight line, never deviates the way most of the industrial relations boys do. He'll give you a yes or no answer whenever he can."

• **Pros and Cons**—If Mr. Cooper has any advantage over his predecessor, presumbly it's a bigger title. As an executive vice president, he should be able to cut through much of the red tape that delayed decisions in other years.

On the debit side, it might be said that he lacks John Stephens' ability to keep cool. "Cooper will take a reasonable amount of criticism, but he won't stand for personal abuse," a USW official declares. Adds a well-informed observer: "He's a man of tremendous capacity, but how well will he adapt to the personality clashes?"

• **Noinflationary?** — Mr. Cooper is concerned about the loss of domestic and foreign markets to European and Japanese producers whose labor costs are less than a third of ours.

He declares: "It seems evident that we are well on the road to becoming noncompetitive with foreign industries.

"Steel imports rose to near record levels in 1958, despite a sharp decline in the domestic market for steel products. The 1958 steel imports increased by more than 30 per cent over 1957's, while shipments by domestic steel producers decreased by about 25 per cent.

"This is a situation that should be brought home to everyone in this country. Surely there must be some way for those so closely joined together—the customers, suppliers, employees, and stockholders—to join hands for the mutual benefit of all concerned instead of using force against each other. Common understanding of the mutual problems, rights, and obligations of people joined in the enterprise is the necessary steppingstone. I believe the burden of developing such understanding must fall upon supervisors."

• **What Labor Expects** — Union leaders think Mr. Cooper will strive to eliminate Section 2-b from the next labor agreement. Reason: It prevents management from reducing crew sizes on jobs where there have been no technological changes (past practices in wages, hours, and conditions of employment must be maintained for the life of the contract).

One USW official figures that incentives will be a big issue, too. Says he: "Cooper favors incentives, but he wants to keep the lid on. He doesn't think a man's incentive earnings should exceed 50 per cent of his base pay. Some of the incentives in effect are paying more than 100 per cent of the base rate."

• **Biography**—Mr. Cooper was born in Beaver Dam, Ky., where his father was a coal miner, operating a small mine. The senior Cooper packed his family into three covered wagons when Conrad was young and moved to South Dakota. The son grew up in the ranching, cattle-raising environment of the West. In his youth he was a cowpuncher and rodeo participant.

Steel Talks Begin in May

The crucial bargaining sessions between the steel industry and the United Steelworkers of America will probably begin May 20 or 21 in New York at the Hotel Roosevelt.

How Basic Metal People Can Better Serve Customers

(Respondents checked factors most important to them)

	All Functions	Corporate Officials & Gen. Mgrs.	Production	Engineering	Purchasing
Maintain Closer Tolerances	43%	39%	49%	46%	46%
Improve Physical Properties	35	29	42	41	37
Better Delivery	34	37	35	21	39
Carry Larger Stocks	21	25	11	16	23
Provide Informative Literature	20	20	16	31	15
Increase Workability	20	16	25	25	22
Employ Better Trained Salesmen	13	16	6	12	15

Source: STEEL survey.

Here's What Buyers Want From Basic Metal Industry

BASIC METAL producers can do a better job if they heed the thinking of decision makers in the four prime metalworking functions.

Buyers are influenced by many factors when they select basic metal suppliers, but at the top are the old fashioned PDQS—Price, Delivery, Quality, and Service with service given first consideration by managers who are responsible for selecting brands and supply sources. The opinions of these men were gathered in a survey by STEEL's Marketing Division.

Others factors: Managers want to deal with firms of known integrity (27 per cent say so); only 15 per cent let the supplier's location affect the choice; and just 10 per cent think that engineering assistance would influence their choice.

Here's a breakdown of the thinking by management functions: Administrative heads place service in the primary category. Production, engineering, and purchasing put emphasis on product quality. That may mean that the operating people, the men who are responsible for fabricating or otherwise using the supplies, are more conscious of material quality and uniformity because it makes their work easier.

• **How To Serve**—Backing this conjecture is the fact that people in the five prime management functions think that producers or distributors of basic metals should maintain closer product tolerances. Production managers know that downtime increases when weight and thickness ranges vary with stock changeovers. In finely set, automated lines, a $\frac{1}{4}$ in. variance in the width of new sheets can call for a lot of machine resetting.

Production men (42 per cent) also believe that suppliers should improve physical properties of materials. New techniques are based squarely on better materials coupled with technical knowhow which accounts for the 41 per cent response by engineers.

• **Delivery Pressures** — Better delivery service is sought by purchasing managers—32 per cent of the men who get complaints from other departments when materials aren't available rated this one highly. They also indicated that suppliers should carry larger stocks.

Product literature is high on the engineering request list. At least 31 per cent feel that such information is a valuable tool.

Should workability of metals be increased? Production and engineering heads indicated that it should—25 per cent answered that basic metals producers and distributors could better serve them with metals that are easier to work.

Improved sales forces were low on the respondents' listing—only 13 per cent of the five management categories feel that better trained salesmen are needed. By function, the following decision makers have regular calls from salesmen: 36 per cent of the men in engineering; 46 per cent of the production managers; 71 per cent of the administrators; and 88 per cent of purchasing managers.

• **Buying Habits** — About 17 per cent of the metalworking plants buy from mills only; 15 per cent purchase stock from warehouses and distributors only; the majority (68 per cent) buy from all three.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

A. O. Smith Shifts Welding Rod Pricing

A. O. SMITH CORP.'s Welding Products Div. today (Mar. 9) initiates the first major change in the pricing format for welding electrodes in many years.

The result: Price reductions of up to 12 per cent for large purchasers.

• **Incentive**—The new setup offers a price incentive to the large users of electrodes in lots of 40,000 lb or over, says G. E. Kemper, manager of the A. O. Smith division. Previously, buyers in the 40,000 lb-and-over range paid the same as those buying 20,000 to 39,999 lb lots. The move also will enable distributors to obtain maximum pricing benefits in 20,000 lb lots, instead of 40,000 lb purchases as has been the practice in the industry and will allow them to enjoy a greater percentage of profit margin in the ranges where they sell 95 per cent of their electrode products.

The A. O. Smith action comes at a time when distributors and many large users of welding products are beginning to stockpile against a possible steel strike.

Ford Expands Steel

It will spend $35 million in modernizing its Rouge plant. Job will be finished in 1962

FORD MOTOR CO. will spend $35 million to modernize its steelmaking facilities at the Rouge Plant (Dearborn, Mich.).

The project will get going as soon as engineering plans are finished. Completion date: Mid-1962.

• **Capacity Up**—Blast furnace capacity will be increased by improving furnace stoves to boost temperatures. Open hearths will be renovated so they can use more oxygen. All ten units will get oxygen roof lances (two have them now) and fuel enrichment burners (four have them now.)

A bank of four soaking pits will be added to the 20 in the rolling mill. A fourth slab reheating furnace at the hot-strip mill and a new, 4-stand, tandem, cold rolling mill will be installed. Additional annealing facilities are planned.

Ford's ingot capacity as of Jan. 1, 1959, was 1,898,600 tons. That will be raised slightly. More important will be the higher potential for finished steel production. Ford will continue to make about half of its own steel; the rest is purchased outside.

• **Timeable**—Preliminary engineering work will be done by Ford. First orders for equipment will be let in the next 30 days. Equipment delivery and construction will start late this fall.

Magnethermic and Ajax To Merge

MAGNETHERMIC CORP., Youngstown, will merge (subject to approval by stockholders) with Ajax Electrothermic Corp. and Ajax Engineering Corp., Trenton, N. J., to create a fully integrated manufacturer of high and low frequency induction heating and melting equipment. The merger is expected to be effected May 1.

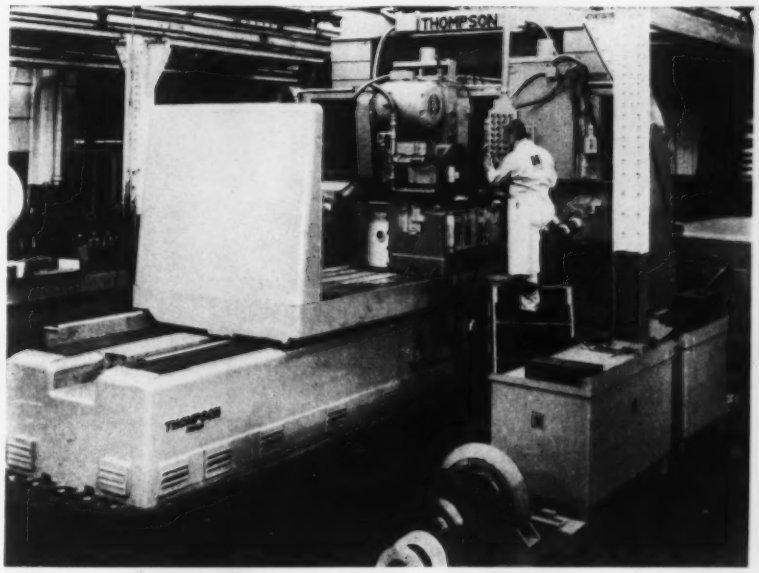
The new firm will be Ajax Magnethermic Corp. with headquarters in Youngstown. It will be largest in the field with anticipated sales of $9 million a year. The merging companies will operate as divisions of the parent organization. Combined plants will have about 175,000 sq ft and employ over 300.

• **Not Competitive**—Basically serving the same customers, the firms were never directly competitive. Magnethermic produces high and low frequency heating equipment. Ajax makes melting equipment, Electrothermic concentrating on high frequency types and Engineering dealing with low frequency types.

• **Better Service**—Magnethermic reports the merger was initiated to give customers better service.

A large decentralized field service organization will be developed, resulting in improved service over a larger geographic region.

John A. Logan, Magnethermic president, will head the new company. The board of directors will be expanded to include Guillam H. Clamer, president of Electrothermic and chairman of Engineering.



THIS 75 TON SURFACE GRINDER, made by Thompson Grinder Co., Springfield, Ohio, is operating at Heald Machine Co., Worcester, Mass. It mechanizes the grinding of ways and substantially reduces hand scraping. Surfaces in any plane are ground to extremely close tolerances

Antisub's Potential High

Contract possibilities are bright as Navy steps up campaign to find better weapons for this type warfare. Russians are building more submarine tonnage than we are. Ratio is 6 to 1

INDUSTRY can best get into antisubmarine warfare (ASW) contracts through the National Security Industries Association.

"There's more industrial interest in this subject today than there has been in any other peacetime period," a Navy spokesman says. Many firms are putting their own money into this work. "One company," he adds, "has put 25 of its best brains on the job."

• **Why NSIA?** — Contractors, of course, must know what is required before they can begin work. That's why co-operation with NSIA is necessary. The organization helps you get security clearance. (For a complete rundown on contract possibilities, see next week's STEEL, Mar. 16.)

Increased public attention on antisubmarine warfare is guaranteed by such efforts as the Navy League's in Washington last week. Pressure on Congress is certain to result. The Navy League brought together 27 metalworking firms already doing business in ASW. They ranged from Acoustica Associates Inc. to Westinghouse Electric Corp.

Speakers from the U. S. Navy argued for more money for ASW. Warned Adm. Arleigh Burke, chief of naval operations: "In any future major war there will be no time to come from behind. The U. S. must deal with the enemy submarines effectively with the weapons systems available from the outset of the conflict." Rear Adm. Charles Weakley noted the Free World operates 90 per cent of the world's ships, while the USSR runs about 60 per cent of the antishipping submarines. "Our forces are minimal," he pointed out. Since 1950, the Russians have outbuilt us in submarine tonnage by a ratio of 6 to 1; 9 to 1 in destroyers; and 14 to 1 in cruisers.

• **What's Needed?**—"With planned production," said Capt. Richard Laning, we could have 30 to 40 nuclear ASW subs by 1965. By then, our present diesel fleet of 100 will be over 20 years old. Another vital part of ASW: Aircraft, both fixed wing and helicopters. Vice Adm. Robert Pirie reported a need for a "breakthrough in detection capability." He wants aircraft to detect a sub at a depth of 1500 ft when it is 50 to 75 miles away.

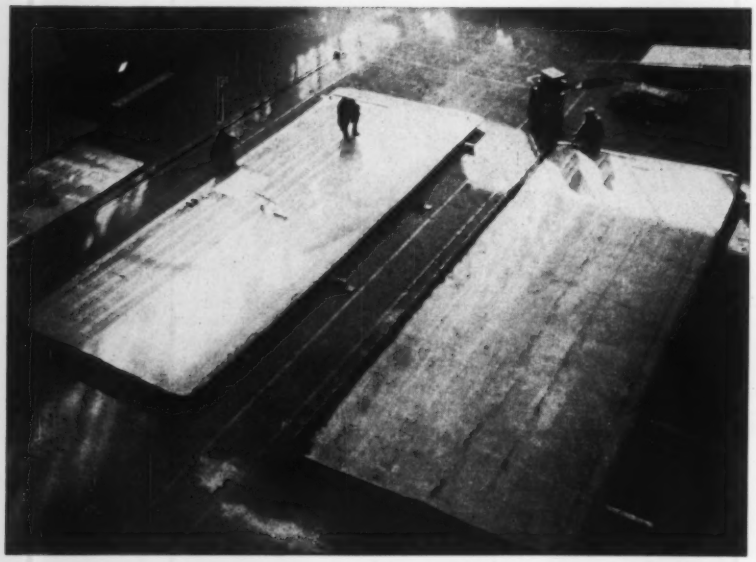
New weapons exhibited at the Navy League show: The Mark 44 torpedo made by General Electric Co.; and the Mark 52 and Mark 55 mines, products of the Naval Gun Factory, Washington.

• **Money Problems**—ASW is no different from any other military effort: Money is needed for more research and development. The fiscal 1960 budget about matches that of fiscal 1959.

Asked if ASW was to get an increasing portion of the Navy's budget over the next five years, Navy spokesmen noted they have to prove their needs before they get more money. We need "some rather surprising fruit from our R&D program. We are looking for inventions," sums up Vice Adm. William Cooper, commander, Antisubmarine Defense Force.

• **What's Ahead?** — Future ASW subs will look "more like supersonic aircraft," believes Captain Laning. A sub doesn't have to be big.

Chance Vought Aircraft Inc. exemplifies firms looking ahead: It is working on detection techniques, integration of aircraft into a complete ASW weapons system, advanced sonar, and the use of subs against attacking missiles.



THESE STAINLESS STEEL PLATES, said to be the largest ever rolled, have been produced by G. O. Carlson Inc., Thorndale, Pa. Designed for pilot plant installation, they measure 451 x 184 x 2 in. and 461 x 179 x 2 in. Each has a finished weight of over 45,000 lb. Ingot weight was 65,000 lb

Steel Drum Shipments Off

Shipments of steel shipping barrels and drums in 1958 declined to 31,643,379 units, compared with 35,701,323 in 1957, the Bureau of the Census reports. Movement in December amounted to 2,663,864 units, compared with 2,419,099 in November, and 2,399,333 in December, 1957.

Steel pail shipments in 1958 were 72,413,137 units, down from 73,678,085 the previous year. December shipments totaled 5,123,083 units, up from 4,992,050 in November, and 4,442,810 in December, 1957.

Metallizing cuts reject rates and costs with part reclamation and rebuilding

Metallizing Is Extended To Production Processes

CORROSION PREVENTION and part rebuilding count big in metallizing's future, but it also has a lot of potential in original production processes.

Example: Sprayed ceramic coatings for thermal barriers. Possible applications include jets, rockets, and nuclear projects.

• **Industry Reports**—The small industry is thriving. It's estimated that 6000 firms (including contract shops and manufacturing plants) use one or more metallizing guns.

Business is good, says SpraRod Corp., Cleveland. Equipment manufacturers confirm this. A 10 per cent gain in sales volume is expected this year by Metallizing Engineering Co. Inc., Westbury, N. Y. Metallizing Co. of America, Chicago, anticipates a similar rise.

• **Uses**—One automotive manufacturer sprays valves with aluminum for corrosion resistance under high heat conditions. After coating, the aluminum is diffused into the steel by heating.

A metal window manufacturer is considering sprayed zinc instead of other coating methods on lightweight units, says Akron Sandblast & Metallizing Co., Akron. Claimed advantage: No heat distortion.

Automotive engine plants are reclaiming crankshafts and other undercut or mismachined parts and are gaining substantial savings. One metallizing official claims that sprayed molybdenum cylinder walls have been tested for Detroit's proposed aluminum engines. Tungsten carbide hard facing is also being done on such items as pump plungers.

Corrosion protection possibilities have not been tapped, says one metallizing jobber. Aluminum and zinc are stressed for corrosion protection. Typical applications include bridges, tanks, ships, and fabricated steel products. For extended life, many spray with zinc. It protects and is an ideal preparatory coat for organic coatings.

• **How?**—Metal or ceramics in appropriate wire, rod, or powder form are fed into a gun. An oxyacetylene flame in the nozzle melts the material, and the spray is propelled to a prepared surface. Spraying is essentially a cold process. The base material can be kept below 100° F to prevent warpage, distortion, or burning.

Paper and wood can be metallized. Mechanical bonding is good on cast iron, steels, alloy steels, nickel, lead, and aluminum. Coatings have been built up to 3½ in. thick. Grit or sandblasting is the most common surface preparation.

Kaiser Steel Starts Up Sand Conditioning Plant

Kaiser Steel Corp. has begun operating its new foundry sand conditioning plant at Fontana, Calif. It will speed the casting of ingot molds for Kaiser's oxygen steelmaking plant which went into production a little over a month ago (see STEEL, Feb. 9, p. 88).

The installation for recovering and conditioning special foundry sand includes an automatic shakeout, a rotary cooler (made by Standard Steel Corp., Los Angeles), fines removal system, storage facilities, and blending machinery.

Kaiser makes ingot molds ranging from 2 to 36 tons each in the foundry for use at the Fontana steel plant.

OCDM Is Firm on Imported Turbines

KEEP YOUR EYE on the Buy American fight going on between the Office of Civil & Defense Mobilization and General Electric Co.-Westinghouse Electric Corp. At issue is the whole matter of imports of equipment and other goods produced at lower costs overseas.

Here's the background: Tennessee Valley Authority last month bought a 500,000 kw turbogenerator from C. A. Parsons & Co. Ltd. in England. TVA had informed the Americans it would pay 20 per cent more to keep the work at home, but Parsons' price was 50 per cent under that of GE and Westinghouse.

Both companies put their case this way: Award of the contract to Parsons constitutes a threat to national security. By 1969, TVA will have half its total power capacity dependent upon foreign firms for maintenance and repair, says Westinghouse. "It is doubtful that a domestic industry could restore a Parsons unit to service without extensive delays."

Why Case Gets Nowhere

So far, the companies aren't making any progress with their case. Involved is the interpretation of the Buy American Act and Section 8 of the Trade Agreements Act (dealing with national security).

OCDM has initiated a survey of all electrical utilities in the country to determine whether foreign equipment breaks down easily or is difficult to maintain.

Until the results are in, the GE-Westinghouse case will be in abeyance.

Complication in Buy American Issue

Adding a complication to the already involved Buy American matter is the Greers Ferry Case. In that situation, the Army Corps of Engineers did not award a contract on two hydraulic turbines to the low (foreign) bidder.

The low domestic bidder, Baldwin-Lima-Hamilton Corp., got the job for $1,757,210. English Electric Co.'s bid of $1,450,700 was 17 per cent less than B-L-H's. Under the Buy American Act, a U. S. firm automatically gets the order if its bid is no more than 6 per cent above the foreign firm's. B-L-H got another 6 per cent differential because it was in a labor surplus area, Eddystone, Pa.

The 12 per cent differential still wasn't quite enough to win the U. S. company the job. What tipped the scale was that its Eddystone plant had some 30 elephant tools (these giants weigh 25,000 to 750,000 lb and are worth $50,000 to $900,000 each).

To give Eddystone the turbine order was, OCDM reasoned, the best way to keep the elephant tools operating. Since 1955, it has been government policy to help industry obtain and use the big tools as a part of the mobilization base. Eddystone's employment is currently about half normal. If the plant were shut down, the country would be left with four plants capable of building the Greers Ferry type turbine. The importance of its 30 elephant tools is evidenced by a Commerce Department report that there are only some 1100 elephant tools in the whole country. They are spread over some 65 plants of about 40 companies.

OCDM argues that the Greers Ferry Case is completely different from the Parsons-TVA matter.

Army Argues for Arsenal System

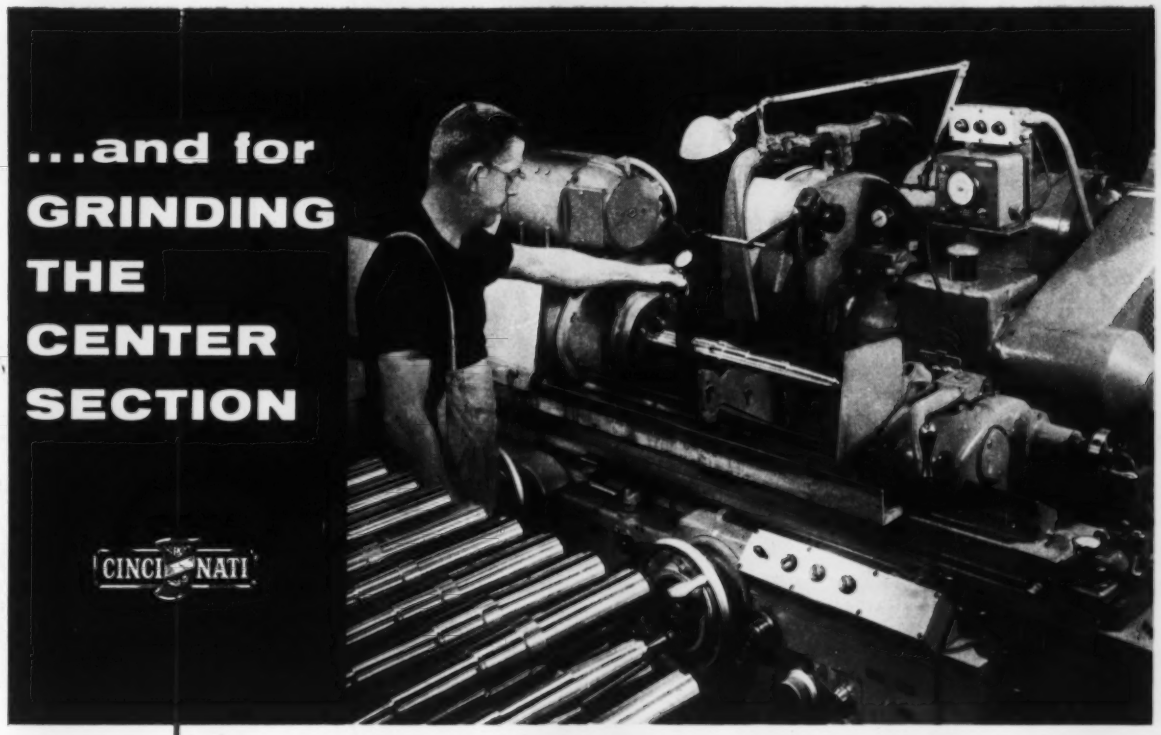
Deep seated Army-Air Force rivalries boiled up again last week in Rep. Chet Holifield's (D., Calif.) hearings on missile management techniques (STEEL, Feb. 16, p. 98). The case for the Army's in-house method was stated by Maj. Gen. J. B. Medaris, commander, Army Ordnance Missile Command: "In dealing with the competitive, commercial world, we must be in a position truly to control our business. We must have technically competent people on the government payroll who have no conflicting interests, and who, therefore, can afford to be objective."

Under questioning, the general pointed out that his people were assured of a career in the field of their choice under the Civil Service system, but scientists and engineers working for a contractor might tend to perpetuate a missile system to assure themselves a job.

The apparent change in Army management techniques on the solid fueled Pershing was made, says General Medaris, because the Redstone Arsenal folks knew upcoming space projects would keep them busy. Martin Co. received most of the management work, with the exception of the guidance system, which was kept in-house. He implied the use of the Pershing technique once does not necessarily mean the Army will use it again on new missiles.

AF Adopts Jupiter Nose Cone?

Defending the arsenal system, the general added that the AF is applying Jupiter nose cone principles to its ICBMs, and may apply them to the Thor. He reported the Jupiter nose cone cost $22 million to develop, while the AF has spent between $180 million and $300 million on its Thor-Atlas nose cone program.



Cincinnati's automatic infeed grinding cycle and automatic gap eliminator are deciding factors in reducing the cost of grinding precision multiple diameter shafts. A CINCINNATI FILMATIC 10"R x 36" Plain Grinder performs the various operations.

CINCINNATI'S Automatic Features are Additional Time Savers

Multiple diameter shafts and multiple operations are often inseparable. The shafts being ground on the CINCINNATI FILMATIC 10"R Plain, above, are typical examples. They require three types of setups: straight traverse, taper traverse, and infeed. The center section is the infeed operation, with a 4" wide wheel. Two automatic features control cycle time:

1) push-button automatic infeed 2) automatic gap eliminator

The latter feature automatically compensates for variations in stock allowances. ¶Traverse grinding operations are equally low in cost and high in quality. Reasons why include rapid stock removal, a well-known Cincinnati advantage . . . FILMATIC grinding wheel spindle bearings (self-adjusting for every setup) . . . automatic grinding wheel balancing . . . smooth hydraulic table traverse (reverses next to shoulder within .004"). ¶Many additional advantages are offered by Cincinnati for grinding multiple diameter work, or any other work within the range of the machine. A simple cost analysis . . . your present equipment vs. a new CINCINNATI . . . can be most revealing. Catalogs G-661-1 and G-660-2 will help you in making a comparison. Write for copies.

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CINCINNATI FILMATIC 10"R Plain Hydraulic Grinding Machine. Range and sizes listed below.

Size	Between-Center Lengths	Catalog
6"R} 10"L}	18" and 30"	G-660-2
10"R} 14"L}	18", 36", 48" 72" and 96"	G-661-1

Sweet's Machine Tool File contains brief specs.

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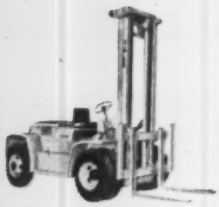

Bringing loads of 15,000 to 20,000 lbs. over rugged terrain in any weather is part of a day's work for the Yale G-3. Twin cylinder lifting! Low center of gravity! I-beam frame assembly! Extra-rugged overall construction! It all adds up to stability never before attainable in a gas truck of this capacity.

As for speed! The Yale G-3 travels at 20 mph! Lifting speeds up to 60′ a minute—extra-fast, controlled lowering, too. Operations are carried out with unusual safety. Operator, seated between widely spaced uprights, has absolutely unhindered forward view. Excellent ground visibility to rear of truck, too.

The Yale G-3 is easily convertible to LP-gas. Available with fluid coupling, standard transmission or Yale's fully automatic Torque Transmission. For further information about this rugged member of Yale's profitable line of industrial lift trucks and hoists, contact your Yale representative. Or write for brochure #5230 to: The Yale & Towne Manufacturing Company, Materials Handling Division, Philadelphia 15, Pennsylvania, Department GT 1-V.

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Jet Planes to Barbecues—Man, That's Diversification

IF YOU FLY a jet plane, or if you barbecue a chicken in the backyard, you may be using an H & B product.

Not long ago, H & B American Machine Co. Inc., Culver City, Calif., was primarily a manufacturer of structural components for military and commercial aircraft. The firm foresaw the decline in manned aircraft, cutbacks, and stretchouts in defense spending. It decided to broaden its base.

• **Points Considered**—H & B started acquiring diversified companies to be operated as divisions of the parent organization. Each company considered was screened on these points: 1. It must be in civilian business. 2. It must be making money. 3. It must have a market potential to underwrite its future as a continuing moneymaker. 4. It must qualify for the long pull.

Each proposal was studied as a new plant and new product project.

When a favorable decision was reached and negotiations completed, purchase was made by cash, cash and stock, or cash and long term payout of profits.

• **Good Results**—Thus far, H & B has obtained Big Boy Mfg. Co., Burbank, Calif., portable home barbecue manufacturer; General Trading Co., St. Paul, distributor of automotive parts and accessories, industrial supplies, and heavy hardware, and Quick Way Truck Shovel Co., Denver, through a joint venture with Penn-Texas Corp., New York.

Diversification has paid off handsomely. Consolidated earnings for the fiscal year ended July 31, 1958, were $1.7 million, up $245,000 from the previous year.

• **Personnel Retained** — Executives of acquired companies stay on the job. That's the key to H & B's continued success and rising profits.

"We believe people who are running a business at a profit know what they are doing and should continue in their management roles under the new ownership," says David E. Bright, H & B's chairman. "We offer what we consider a strong financial inducement for those executives to remain with us."

H & B uses its own management people for counseling the newcomers on occasion, but they are never directly in the plant except when the management team may be incomplete.

• **Defense Still Strong**—The firm's Aircraft Div. is still actively engaged in military aircraft programs, including work for the Boeing B-52 and Convair's B-58 and F-106. It also supplies components for the Boeing 707 and Convair 880 commercial jet airliners. But diversified products which can be introduced into the existing facilities at Culver City and Indianapolis are being studied.

The broad base H & B is building enables the firm to avoid putting all its eggs in the defense basket.

Group Seeks U.S. Contracts

Cleveland industry has started a drive to garner more U. S. defense business for the area.

Formed by 14 charter member companies, the Cleveland Aero-Space Association hopes eventually to bid on government contracts for a group of 20 to 30 firms. A number of other Northeast Ohio defense contractors are considering alliance with the association.

President of the association is Robert J. Laws of Otis Elevator Co.'s Baker Industrial Truck Div., Cleveland. He sees the group as a tonic for Cleveland industry's "lethargy" in securing federal contracts. Support of some military men and members of Congress has resulted from a year's legwork by association founders, he says.

Initially, the group will try to land smaller projects (such as missile subsystems) and seek bigger budget items as experience, capacity develop.

Isotope Sales Jump in '58

A 37 per cent leap in volume of radioisotopes sold to private business brought 1958 sales of $2.4 million to the Atomic Energy Commission's Oak Ridge National Laboratory.

Total shipments were only slightly above the 1957 figure, indicating that peaceful users of nuclear energy are buying in bigger quantities. The year's decline in dollar sales (from $2.6 million in 1957 to $2.4 million), reflects a cut in the price of cobalt 60.

The radioactive materials bought by private industry are used extensively for inspection, research, and material conservation (STEEL, May 12, 1958; p. 104). Private domestic suppliers sold $467,917 worth of isotopes overseas, with the bulk of shipments going to Japan.

REPUBLIC STEEL WIRE

Adds Glamour and Safety to Modern Design

The wire products shown on this page were fabricated from Republic Manufacturers' Coarse Wire by Kerr Wire Products Company, Chicago, Illinois.

Manufacturers who produce a wide variety of wire forms, such as The Kerr Wire Products Company, find Republic's wire a valuable aid in meeting design requirements, minimizing losses, and stepping up production.

Uniform quality assures accurate, easy forming with adequate strength and rigidity, and is one of the reasons why Republic Steel Wire is specified for difficult design and forming problems. Up-to-date machines and methods, skilled laboratory control and careful inspection assure every purchaser of Republic Steel Wire that it will suit his specific requirements.

Republic produces wire in a wide range of sizes, grades, and finishes. Large tonnages are used to fabricate fan guards, wire partitions, racks, grilles, display stands, reinforcing specialties, threaded fasteners, and many other wire products.

Republic Wire Metallurgists are always available to work with your personnel in solving production problems. This service is obligation-free. Mail the coupon if you would like an experienced wire metallurgist to call.

REPUBLIC PIG IRONS HELP PRODUCE highest quality die sets for the metal stamping industry. The Producto Machine Company, Bridgeport, Connecticut, casts die set parts in their own foundry using only raw materials with a definite known analysis, including Republic Pig Irons. The pig iron portion of the charge consists of equal parts of Chateaugay Pig Iron and Republic Malleable Pig Iron. The year-in, year-out uniform chemistry of these fine irons helps Producto produce high quality, laboratory-controlled castings. The company has found that there is no better, no more economical means for insuring strong, flaw-free, easy-to-machine castings. A Republic Pig Iron Metallurgist will give you all the facts on all Republic Pig Irons for quality castings. Mail the coupon today.

REPUBLIC COIL COVERS HELP PROVIDE shipping protection for coil users. These covers offer excellent weather protection, shut out dirt, stop vandalism, eliminate costly replacement of short-lived tarpaulins, eliminate the need for paper wrappings. Covers are easily handled by overhead or trackside crane and are designed for stacking. Republic Coil Covers measure 22 feet long, six feet wide, and six feet high. Two covers are used with each 52-foot gondola car. Send coupon for complete facts.

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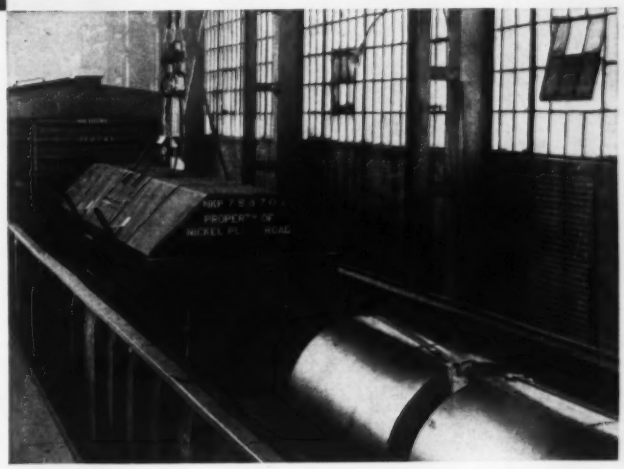

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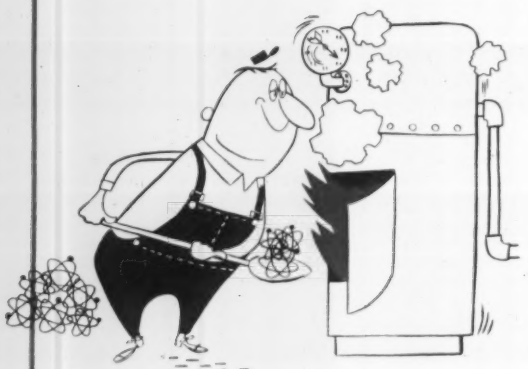
Process Steam & Space Heating: First Major Commercial Use of Atomic Power?



"This application of nuclear energy has largely been neglected or bypassed because of the seemingly greater potential in electric power generation—but the projected cost of a nuclear steam plant under certain conditions approaches competitiveness with a fossil fuel plant."

Here is a cost comparison of coal fired and nuclear steam plants capable of producing 150,000 lb of steam an hour at 150 to 200 psi:

	COAL FIRED	NUCLEAR
Investment:	**$1.5-2 Million**	**$3.3 Million**
Operating Cost Per 1000 lb at a rate of 1 billion lb per year	**83 cents**	**$1.04**

If the nuclear plant investment could be cut to $1.5 million, the cost of nuclear steam would be 76 cents per 1000 lb (assuming credit for the sale of plutonium created by the plant and no charge for uranium use).

Source: Theodore Marvin, president
Michigan Chemical Corp.
St. Louis, Mich.

Business Still Slow in Atomics

THE BRIGHT NEW AGE of atomic energy is getting a little tarnished.

• **Do We Need It?**—For the most part, benefits for metalworking in general are still to come because programs dreamed of five years ago have failed to materialize.

W. Kenneth Davis, vice president, Bechtel Corp., San Francisco (engineer and constructor of nuclear powerplants), says that by 1965, only 2 million to 3 million kilowatts of electricity will be produced annually in the U. S. by the atom. That will just about match the British program. He is not disheartened by his estimate, but in Congress, Democratic members of the Joint Atomic Energy Committee are. They feel this country has lost its early lead in the field, because the government has failed to encourage the industry by big enough subsidies, or by doing the job itself.

At issue here are fossil fuel interests, who point out this country doesn't need cheap atomic power while the British do. We can wait until 1975 for our big effort, implies Philip Sporn, president, American Electric Power Co. The country will require 2 trillion (2000 billion) kilowatts in 1975, three times the needs of 1957. Only 7.5 per cent will be generated from nuclear power. By the year 2000, 6 trillion (6000 billion) kilowatts will be needed, and about 55 per cent will be from the atom. From 1975 to 2000, coal consumption will increase comparatively little: From 475 million tons to 600 million tons annually. Nuclear power will account for over 75 per cent of the increase in electric energy generation from 1975 to 2000.

"I believe there is grave danger that so great an emphasis will be placed on atomic power development that we will tend to forget the essentiality of fostering the continued development of an adequate supply of coal, oil, and gas," warns Mr. Sporn.

• **Costs Leap**—Tremendous costs of nuclear power are also helping to lessen industry's love for the field. Yankee Atomic Electric Co., Rowe, Mass., figured a year ago that the cost of its first power operations would run $33 million (including the reactor, land, buildings, support,

and electrical generating facilities). Today, it estimates costs at $57.5 million, with the reactor costs alone having jumped from $16.8 million to $38.4 million.

James Fairman, senior vice president, Consolidated Edison Co. of New York Inc., notes the cost of his firm's facility rose $10 million (to $100 million) in the last year. The increase is "almost wholly attributable to price escalation."

• **Equipment Market**—Earlier estimates of a $4 billion equipment market during the next decade are discounted by industrial and Congressional sources alike, because they were based on the assumption of 6 million electrical kilowatts from the atom by 1968. The reluctance of the AEC to start big programs is also counted as bad news for equipmentmen.

Hopes for a stepped-up program are dim with the White House certain to frown on anything that might topple the precariously balanced budget. AEC has asked for just six new starts (20 are underway) in fiscal 1960. The AEC wants to stick with small prototype plants until the atom's competitiveness with coal (for the production of electricity) has been clearly demonstrated.

Industry may win higher subsidies. AEC is proposing a change in the law to permit federal grants up to 50 per cent of total capital costs of an atomic powerplant.

Republicans think AEC's program enough: $130 million in fiscal 1958 for the civilian power program; $182 million in fiscal 1959; $249 million in fiscal 1960.

AEC reports industry spent $70 million for the fabrication and construction of power reactors in fiscal 1959, compared with $40 million in fiscal 1958.

• **Industry's Role** — With no firm definition of industry's role in our atomic future set, some firms still have the corporate guts to go ahead on their own. Example: Michigan Chemical Corp., St. Louis, Mich. Three years ago, it started a study for producing process steam by a nuclear plant. With about $50,000 of its own money and an "encouraging" letter from the AEC, Theodore Marvin, president, says the firm has produced a report which is a "good guinea pig." He wants the AEC to build the plant, let his firm operate it. He would pay for the steam produced at the conventional rate of about 90 cents per 1000 lb. (Michigan Chemical is in a high cost area.)

American Radiator & Standard Sanitary Corp. is also interested in process steam. "Once such a reactor has been successfully operated over a reasonable period of time, it will be able to produce steam at competitive rates for a substantial portion of the American market," predicts John Linsenmeyer, executive vice president. Looking farther ahead, he thinks the development of process steam plants would "indirectly expedite economic electrical power generation," because of the experience industry would gain.

• **Industry's Reluctance** — U. S. businessmen must also get used to the idea of everyday contact with radiation, as well as doing more development work on their own, suggests Industrial Nucleonics Corp., Columbus, Ohio. "Our gage installations expose process operating personnel to less radiation than is absorbed by wearing a luminous dial wrist watch," comments George Foster, vice president.

The cost of installing a measuring-control system in basic industries like steel, paper, and rubber: From $15,000 to $250,000. The savings: 4000 systems now operating save $300 million a year in raw materials.

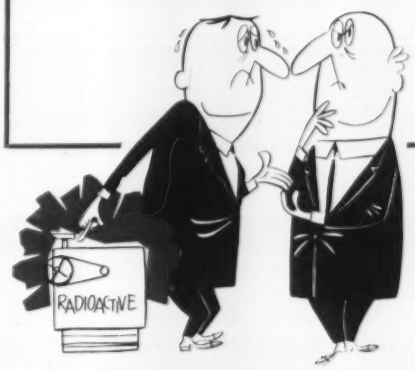
Industry Is Reluctant To Use Isotopes . . .

"We are only scratching the surface in isotope applications . . . why is it that these scientific principles which permit us to measure and control so swiftly and with such amazing accuracy are not actively adopted by management? American industry is still waiting to be shown, (and) information is not getting into the hands of the management people who are responsible for decisions," says Samuel Auchincloss, president, Tracerlab Inc., Waltham, Mass.

To get isotopes used by more companies, Mr. Auchincloss suggests:

1. The Atomic Energy Commission should invite potential users to explain where they may be able to apply isotopes; AEC would underwrite the cost of application engineering surveys and purchase the necessary equipment.

2. AEC would report the results of the studies to industry, thus encouraging the wider use of isotopes.



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*Patent Applied for

Complete details about Amchem Granodraw processes are contained in Bulletin 1437. Write for your copy today.

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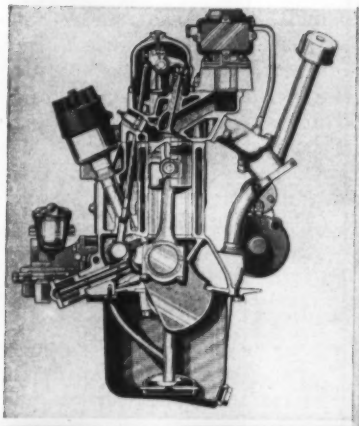

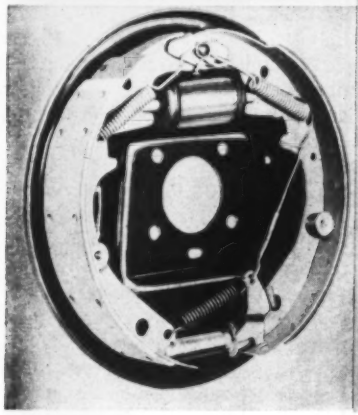

These Are Design Highlights

ENGINES

- Aluminum Engine for Chevrolet
- Overhead Valves for Plymouth 6

TRANSMISSIONS

- Hydra-Matic Goes Slimline
- Transaxle Debut Delayed

BRAKES

- Ford Widens Drums
- Buick Stays with Aluminum

Detroit Readies 1960 Models

FEW CHANGES are expected in suspension systems and brakes for 1960, but significant improvements in transmissions and cooling systems will be seen at General Motors and Ford, says Detroit's rumor mill. Biggest news in the engine field is the Porsche type aluminum design that's scheduled for Chevrolet's light "H" car (see STEEL, Mar. 2, p. 87).

After nearly 20 years, Plymouth is reworking its 6 cylinder in-line powerplant for overhead valves.

Aside from Chevy's light job and the Plymouth redesign, few changes are anticipated in autodom's 1960 engine lineup.

No other aluminum engines are scheduled until the 1961 models although Chrysler may get its 6 cylinder diecast model underway late this summer. GM's Buick Div. supposedly has taken over production development on another V-8 aluminum powerplant, but it won't be ready before 1962. American Motors Corp. has sent an expediter to Germany to oversee production of dies for an aluminum diecast engine. It's believed this a Doehler-Jarvis job. Ramblers aren't likely to see it before 1962. Ford's aluminum engine programs still are in the development stage. GM has built prototype engines for test.

• **Radiator**—One significant change expected in 1960 Ford Div. cars is a cross flow radiator. The top tank is mounted separately over the engine. The coolant runs sideways through the radiator core, still placed in front of the engine. Advantages: More efficient cooling and some height reduction.

• **Transmissions** — Contrary to popular reports, GM's Cadillac Div.

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will not introduce a Transaxle in 1960. Neither will other GM divisions. The Transaxle is under development, but isn't expected until 1962 at the earliest.

One reason for the holdup is that GM still is developing a swing axle system to be used with the rear transmission setup. According to several sources, the corporation has not decided which type universal joint it will use for the Transaxle. With the present setup, GM uses a simple, hook type universal joint. The swing axle has more torque requiring a different type joint. Two commercially available units have been considered. One is the Bendix Weiss universal joint. The other is the Rzeppa joint, made by Gear Grinding Machine Co., Detroit.

• **Hydra-Matic Changed**—Chevrolet's light car will be using a revamped version of the Hydra-Matic transmission, say STEEL's sources. It's supposed to have three speeds forward—low gear, a 1:1 ratio, and overdrive. The larger Hydra-Matic cases are redesigned so the transmission can be mounted farther forward. This takes some bulk out of the passenger compartment and permits the floor pan to be flattened a few more inches. Both the conventional and light Hydra-Matic cases supposedly have special lugs for rear axle attachment.

Chrysler is reportedly readying a two stage version of its Power-Flite transmission, but this is not expected for 1960 introduction. It may be an option later when Chrysler's light car arrives. Chrysler will make its transmission and torque converter housings from aluminum next year. Reliable sources say that Ford transmissions are virtually unchanged.

• **Suspension**—Air suspension still hasn't caught on, but carbuilders will continue to offer it, primarily as a load leveling device, in 1960. Ford doesn't have air this year, but hopes to get a high pressure (1100 psi) system in operation in the fall. It will be used as a load leveler in conjunction with rear leaf springs. Chrysler has no intention of using anything but torsion bars through 1962, but will continue with air bags for load leveling.

Experimentation is continuing on self-pumping and self-contained air springs.

Changes will be seen in ball joints after 1960. They're being coated with Teflon for long life without lubrication. Three versions are being tested by the Big Three and American Motors Corp. Tentative release is set for 1961. Next year, Cadillac's gas bag shock absorber will be optional equipment on Buick and Oldsmobile.

• **Wheels and Brakes** — Diecast aluminum wheels with integral brake drums and hubs have been considered for the Imperial. A permanent mold version has been proposed for Mercury. It appears neither of these will be released for 1960 production.

Buick's aluminum brake drum will continue next year. It's reported that Pontiac and Oldsmobile will make the aluminum drums available for police cars and taxis.

Ford Div. will widen its brake drums ½ in. to provide more surface, but the diameter will be unchanged. Self-adjusting brakes being used on Edsel and Mercury will be continued. Other divisions will stick with present brakes and wheels. The 13 in. wheels still are programmed for advance models, but they can't be used until more efficient drums and wheels are developed (see STEEL, July 7, 1958, p. 49).

U. S. Auto Output

Passenger Only	1959	1958
January	545,757	489,515
February	477,500†	392,112
2 Mo. Totals	1,023,257†	881,627
March		357,049
April		316,503
May		349,474
June		337,355
July		321,053
August		180,324
September		130,426
October		261,696
November		514,099
December		593,920
Total		4,243,526

Week Ended	1959	1958
Jan. 31	119,678	104,359
Feb. 7	114,282	109,028
Feb. 14	115,491	101,656
Feb. 21	120,780	89,977
Feb. 28	127,749†	91,508
Mar. 7	130,000*	83,892

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

• **Injectors Out**—Fuel injection obviously has fallen by the wayside as carbuilders continue with an economy kick. It allows efficient, therefore more economical, operation. But it still costs more than carbs. Thompson Ramo Wooldridge Inc.'s Thompson Products Div., Cleveland, reportedly is developing a system that interests GM. It's supposed to cost under $50 in quantity production. Meanwhile, Chrysler is working with a supplier to injection mold a plastic carburetor.

• **Hydraulics** — Another Thompson Products offering is a hydraulic, constant speed drive programmed for 1960 Lincolns. It will power one or two accessories, possibly the air conditioning compressor and power steering pump. In time, it could be used for the generator, say engineers. This drive unit is considered by some industry men to be the first step toward a central hydraulic system, long standing dream of auto designers working on accessory components, such as power brakes and steering.

• **Electrical**—A flat, electric motor about the size of a king sized cigarette package, will be used to run radio aerials up and down on next year's Lincolns. This little package is expected to gain acceptance elsewhere for windows and seats.

While electronic ignition systems have been talked about in recent rumor columns, they will not appear in 1960 and probably won't be used before 1963.

Willys To Build Dauphine

Willys Motors Inc., Toledo, Ohio, will build Renault Dauphines in its Brazilian affiliate plant, Willys-Overland do Brasil. By the end of next year, the Sao Paulo facility expects its annual production rate to be 50,000 units.

Willys currently is producing 30,000 Jeep vehicles and Willys cars yearly at Sao Paulo, but it's expanding to produce these vehicles at a 100,000 annual rate.

Based on Renault's success in this country, it looks like Willys is making a smart move. Last year, Renault sent 22,439 cars to the U. S. This year, it shipped in 47,567 to keep second place in the import race, 30,000 behind Volkswagen.

Photo courtesy of The Park Drop Forge Co.

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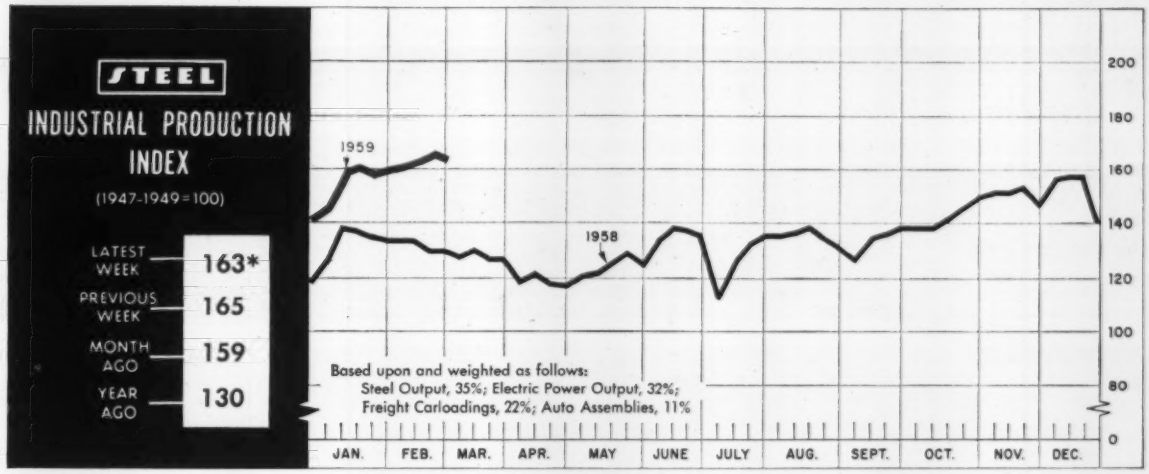

*Week ended Feb. 28.

Construction Gives Economy Fillip

THE CONSTRUCTION industry is doing about everything expected of it as the perennial pace setter of the economy. It is setting records in the value of work put in place, and the high level of contracts coming in means that it will continue to do so throughout 1959.

• **Bucking the Weather** — Despite one of the most severe winters in recent years, construction activity has been at unusually high levels. During January, work put in place totaled $3.657 billion, the highest figure on record for that month. February figures may not show up so well because of heavy snows and floods, but with an even break in the weather, this should be the best March in history.

The high level of contracts for future work during the last half of 1958 assured builders of brisk activity for early 1959. Contracts started to turn up from recession lows last May, which accounted for a corresponding rise in work put in place two to four months later. Now F. W. Dodge Corp., New York, reports that contracts in January continued to show strength. At $2.3 billion, they were slightly above the December level and 12 per cent ahead of January, 1958, awards.

Engineering News-Record says that the cumulative total for future engineering construction for the first two months of 1959 is 21 per cent ahead of the 1958 pace. Further evidence of a continuation of the uptrend is seen in the level of building permits in 217 major cities as reported by Dun & Bradstreet Inc. In January, the total was 8.8 per cent above the previous record dollar volume for that month.

• **Change in Emphasis**—The big reason builders are so optimistic is the firmness of the housing market. Nonfarm housing starts in January were the second best for that month, and the seasonally adjusted annual rate was nearly at the record level of 1955.

The most outstanding feature of

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1,000 net tons)[2]	2,535[1]	2,506	1,425
Electric Power Distributed (million kw-hr)	12,800[1]	13,259	11,803
Bituminous Coal Output (1,000 tons)	8,050[1]	8,245	6,790
Crude Oil Production (daily avg—1,000 bbl)	7,150[1]	7,208	6,841
Construction Volume (*ENR*—millions)	$285.7	$398.3	$304.7
Auto, Truck Output, U. S., Canada (*Ward's*)	162,125[1]	155,504	117,471
TRADE			
Freight Carloadings (1,000 Cars)	540[1]	583	554
Business Failures (Dun & Bradstreet)	310	292	317
Currency in Circulation (millions)[3]	$31,111	$31,205	$30,542
Dept. Store Sales (changes from year ago)[3]	+24%	+8%	−18%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$21,231	$24,301	$20,877
Federal Gross Debt (billions)	$285.5	$285.1	$274.9
Bond Volume, NYSE (millions)	$27.1	$32.3	$19.8
Stocks Sales, NYSE (thousands of shares)	16,355	18,505	8,623
Loans and Investments (billions)[4]	$94.1	$94.3	$87.0
U. S. Govt. Obligations Held (billions)[4]	$31.2	$31.6	$26.5
PRICES			
STEEL's Finished Steel Price Index[5]	247.82	247.82	239.15
STEEL's Nonferrous Metal Price Index[6]	216.0	218.1	201.7
All Commodities[7]	119.4[1]	119.4	119.2
Commodities Other than Farm & Foods[7]	127.6[1]	127.6	125.8

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1959, 2,831,486; 1958, 2,699,173. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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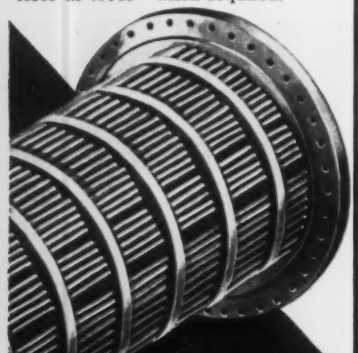

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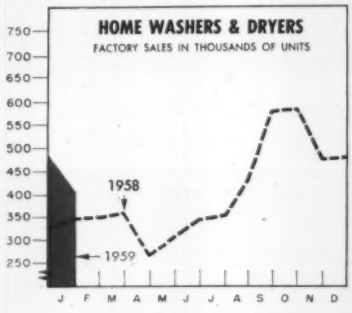
TUBE METHODS INC.

BRIDGEPORT (Montgomery County), PENNSYLVANIA

THE BUSINESS TREND



	1959	1958	1957
Jan.	3,518	3,047	8,775
Feb.	....	3,684	9,769
Mar.	....	2,871	10,485
Apr.	....	3,572	4,559
May	....	954	5,389
June	....	3,672	4,369
July	....	5,169	4,332
Aug.	....	3,533	3,924
Sept.	....	4,846	7,463
Oct.	....	3,105	3,674
Nov.	....	5,597	2,832
Dec.	....	4,284	3,992

Industrial Heating Equipment Assn. Inc.

(Seasonally adjusted)

	Washers		Dryers	
	1959	1958	1959	1958
Jan.	288,491	244,840	118,220	100,793
Feb.	.....	268,143	.....	79,683
Mar.	.....	287,884	.....	71,523
Apr.	.....	224,896	.....	38,475
May	.....	262,999	.....	41,898
June	.....	288,831	.....	54,173
July	.....	277,287	.....	75,513
Aug.	.....	326,785	.....	109,833
Sept.	.....	423,073	.....	158,733
Oct.	.....	404,056	.....	180,405
Nov.	.....	333,035	.....	142,499
Dec.	.....	330,520	.....	148,670
Totals				
	.....	3,672,349	.....	1,202,198

American Home Laundry Mfrs. Assn.

Charts copyright, 1959, STEEL.

EN-R's February report is the fact that private construction awards are greater than public contracts for the first time in two years. "Pressure so far is coming chiefly from large scale home builders. . . . This sharply stepped-up rate of contracting should show up later this year in housing starts," it declares.

• **Signs of Life**—Observers feel that the construction picture for 1959—though good—will lack vitality unless it gets support from the industrial sector. They may have picked up a clue from last month's figures. Contracts moved 8 per cent above the January rate for industrial building and topped every month of 1958 except February, when four big powerplant additions swelled the total.

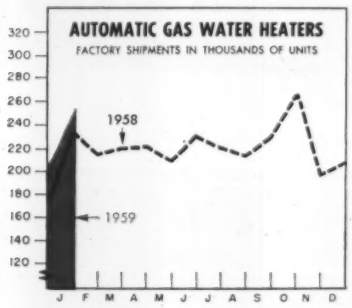
Some increased industrial activity is reflected in a 20 per cent increase in bookings for fabricated structural steel in January. The total of 235,784 tons topped the year-ago mark for the eighth consecutive month, although it was only slightly above the 1958 monthly average. Bookings exceeded shipments by 11,524 tons, says the American Institute of Steel Construction Inc., but cancellations forced a slight contraction in fabricators' total backlogs.

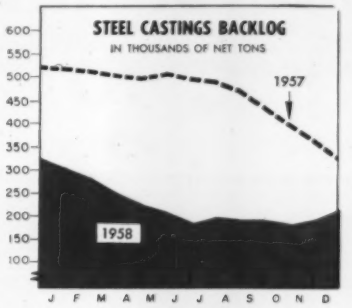
Shipments have been declining steadily since September, but a reversal in that trend is expected because of: 1. Better weather conditions. 2. An improvement in plant and equipment expenditure plans. 3. A possible acceleration of building schedules as a hedge against a probable steel strike and higher steel prices.

• **Real Improvement**—If the trends continue, and if the government's road building program progresses as planned, there should be no question of a dollar volume record close to $53 billion for new construction put in place this year. Some of the $4 billion increase over 1958's total will be accounted for by rising costs. (In the last year, building costs have gone up about 4 per cent.) But physical volume should increase by close to 3 per cent over 1958. This in turn will help boost both employment and personal income and keep the recovery on the beam.

Index Pauses for George

STEEL's industrial production index was temporarily halted in its climb to a new peak during the week ended Feb. 28. Observance of Washington's birthday cut 2 points





	Shipments—Units 1959	1958	1957
Jan.	254,300*	235,400	214,900
Feb.	.....	216,300	208,200
Mar.	.....	221,600	226,600
Apr.	.....	221,900	238,200
May	.....	210,000	233,400
June	.....	231,000	211,700
July	.....	221,400	192,500
Aug.	.....	215,500	210,300
Sept.	.....	230,000	215,500
Oct.	.....	265,900	234,700
Nov.	.....	196,700	173,500
Dec.	.....	209,300*	172,800
Totals	.....	2,675,000*	2,532,300

*Preliminary.
Gas Appliance Mfrs. Assn.

	Shipments 1958	1957	Unfilled Orders* 1958	1957
Jan.	120.7	169.2	304.9	519.6
Feb.	103.3	154.9	282.4	511.8
Mar.	106.2	160.1	252.8	503.4
Apr.	91.5	162.5	229.5	497.6
May	87.0	164.6	211.3	505.0
June	92.9	153.6	190.8	494.3
July	68.8	122.0	200.3	489.4
Aug.	80.9	145.9	196.3	471.2
Sept.	85.3	139.0	196.5	438.5
Oct.	95.4	146.4	184.9	395.9
Nov.	85.3	127.1	194.0	362.9
Dec.	103.8	120.8	214.0	327.3
Total	....	1,766.1		

*For sale. U. S. Bureau of the Census.

from the postrecession high of 165 (1947-49=100) marked up in the previous week. Dips in output of electric power and freight carloadings completely outweighed continued gains in the steel and auto industries.

The steel industry is the driving force behind the current uptrend. Last week, steelmakers set a record of 2,535,000 net tons of steel for ingots and castings, beating the old mark set in December, 1956, by 10,000 tons. The operating rate was 89.5 per cent of capacity. Demand for steel products is continuing strong, which raises the question of how high output can go before the labor contract expires on June 30. Some observers point out that 5 to 10 per cent of the industry's capacity is marginal, or obsolete—equipment which would be pressed into service only in an emergency. Since this is no emergency, it looks like the top output could be about 2,690,000 tons, or 95 per cent of capacity.

Automakers are scheduling output of cars and trucks at the highest rate since mid-January now that Chrysler Corp. is back in full operation. *Ward's Automotive Reports* says producers are shooting for 3,218,000 units for the first half, up 44 per cent from the first half of 1958. While this will put inventories in good position for an expected buying spurt in the spring, it also sets the stage for sharp cutbacks if sales fall flat.

Trends Fore and Aft

• Producers of gas appliances started off 1959 at a fast clip. They shipped 148,600 gas ranges in January, up 15.7 per cent from the corresponding 1958 period. Water heaters continue to set the pace, though. The industry shipped 254,300 units in January, higher than any monthly total of 1958 except October, reports the Gas Appliance Manufacturers Association.

• The American Home Laundry Manufacturers' Association reports its members also had a good January, topping year-ago shipments by 18 per cent. (See graph, Page 52.)

• Pennsylvania Railroad officials have approved building 11,500 freight cars at the road's Altoona, Pa., shops. Officials say this is the start of an extensive carbuilding program. Erie Railroad last week ordered 200 boxcars from Pullman-Standard Car Mfg. Co.

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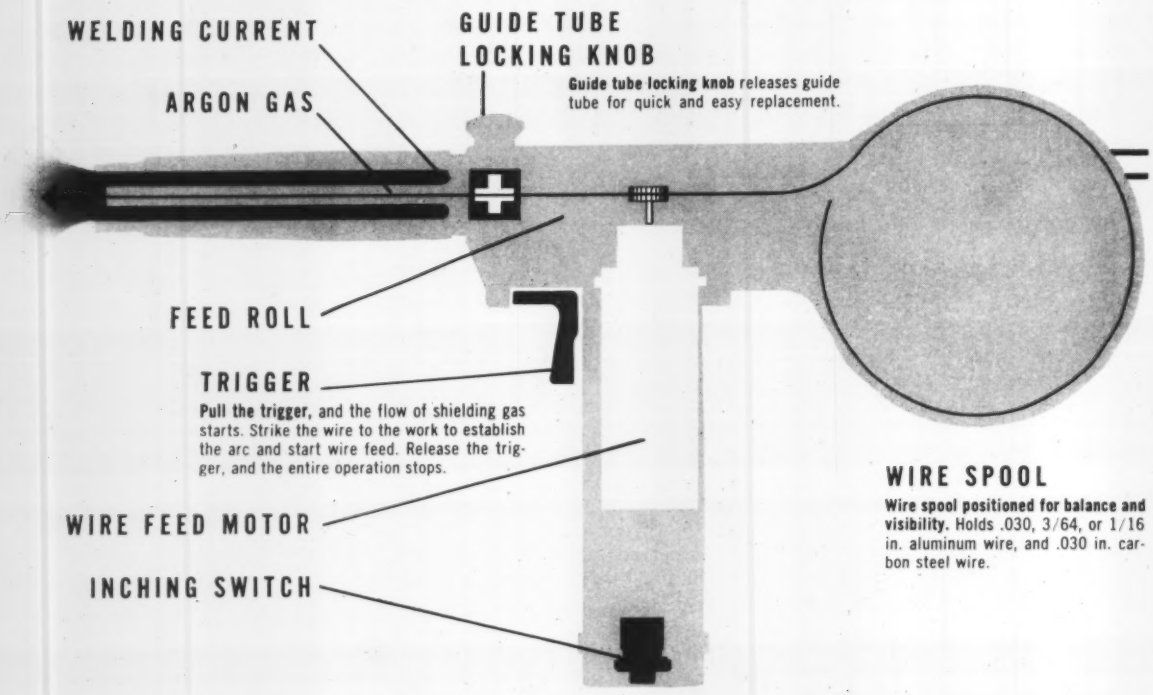
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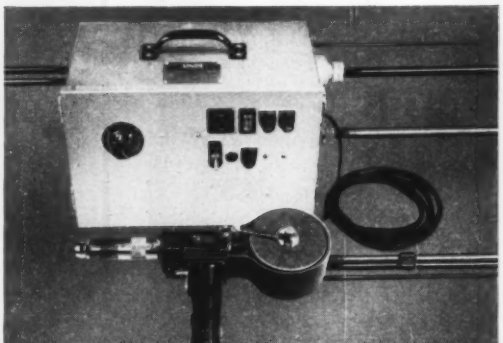

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Linde UNION CARBIDE

JOHN T. SCHANER
J. H. Williams p. a.

FRED DUFF
Morse Twist Drill v. p.

DONOVAN J. MURRAY
Mahoning Valley Steel pres.

J. HARRY REED
Youngstown Foundry v. p.

John T. Schaner was appointed purchasing agent, **J. H. Williams & Co.**, Buffalo. He succeeds the late **J. P. O'Brien. Frank J. Weber** succeeds Mr. Schaner as assistant purchasing agent.

Fred Duff was elected vice president and sales manager, **Morse Twist Drill & Machine Co.**, New Bedford, Mass., division of Van Norman Industries Inc.

James R. Brown was elected president, **West Bend Aluminum Co.**, West Bend, Ind. He succeeds **Albert C. Kieckhafer**, elected to the new post of chairman.

R. David Mathias was made vice president-sales, **L & J Press Corp.**, Elkhart, Ind. **Robert H. Kemp** was made chief engineer. He was with E. W. Bliss Co.

Max L. Hopkins was named Pacific Coast sales manager, San Francisco, for **Wheeling Steel Corp.**

W. T. Mitman was named to the new post of administrative manager of product sales for **Aluminum Co. of America**, Pittsburgh. He was product manager-sheet and plate sales, and is succeeded by **Richard A. Sweet**, former Cleveland district sales manager. **H. T. Wilder** fills the new post of commercial manager-product sales, and is succeeded by **Albert H. Grosch** as product manager - distributors, warehouses, and jobbers. **James A. McGowan** replaces Mr. Sweet at Cleveland. **Robert J. Ogden** was made manager-screw machine stock sales.

Donovan J. Murray was elected president, **Mahoning Valley Steel Co.**, Niles, Ohio, an affiliate of General Electric Co. He succeeds **John P. Hosack**, retired. Mr. Murray was general manager of GE's Conduit Products Dept. at Bridgeport, Conn.

William C. Yocum was promoted from chief engineer to vice president-engineering, **Superior Valve & Fittings Co.**, Pittsburgh.

Dwight W. Kaufmann was appointed manager of tool steel sales for **Crucible Steel Co. of America**, Pittsburgh. He succeeds **A. H. Lewis**, named assistant to the works manager of the Sanderson-Halcomb plant in Syracuse, N. Y.

Carpenter Steel Co. appointed **David J. O'Neil** Pacific regional manager (Pasadena, Calif.); **William C. Kunkelman**, midwestern regional manager (Cincinnati); **Harold R. Potter**, east-central regional manager (Bay Village, Ohio). **Edward J. Barcal Jr.** was made midwestern manager, Alloy Tube Div.

Lloyd P. Robertson, manager of the Conveyor Div., **Logan Co.**, Louisville, was elected vice president.

Lloyd Leeseberg was made sales manager, **Superior Foundry Inc.**, Cleveland, succeeding **Warren W. Brown**, resigned.

Howard B. Myers was named a vice president; **Robert W. Romer**, controller, **Tenn-Tex Alloy & Chemical Corp.**, Houston, subsidiary of Tennessee Products & Chemical Corp.

J. Harry Reed, former sales manager, was named vice president-sales, **Youngstown Foundry & Machine Co.**, Youngstown.

Kingsley C. Drone was made chief engineer, Aircraft & Missile Div., **Clearing Machine Corp.**, Chicago. He was chief engineer of Hufford Corp.

William H. Hall was named manager of marketing for **General Electric Co.'s** newly organized rectifier components product section, Semiconductor Products Dept., Auburn, N. Y.

Robert J. Nixon was named to a management staff post at Racine, Wis., headquarters of **J. I. Case Co.** Pending full staff responsibilities in Racine, he is assigned the interim position of director of manufacturing, Harvesting Div. Mr. Nixon was president of Motor Products Corp., Detroit.

Charles Schaefer was made general sales manager, **Permanent Filter Corp.**, Los Angeles. He was west coast branch general sales manager, S & S Machinery Co.

Henry S. Warren was made general sales manager, **Sutorbilt Corp.**, Compton, Calif.

James W. Lewis joined **Swanson-Erie Corp.**, Erie, Pa., as manager of sales engineering.

John D. Fansler was named general manager of **Indiana Oil Equipment Co.**, Indianapolis. He handles all administrative and sales ac-

THOMAS A. FRISCHMAN
added duties at Eaton Axle

ALBERT L. FAIRLEY JR.
Dominion Steel president

WALTER F. KAUFMAN
joins Paulsen-Webber

THEODORE L. KISHBAUGH
Ryerson plant gen. mgr.

tivities. He was with Blackmer Pump Co.

Thomas A. Frischman, for the last 22 years chief metallurgist in the Axle Div., **Eaton Mfg. Co.,** Cleveland, was also made chief of quality control.

Albert L. Fairley Jr. was elected president, **Dominion Steel & Coal Corp. Ltd.,** Montreal, Que. Former executive vice president, he succeeds **Crawford Gordon Jr.,** now chairman. **Allan C. MacDonald** was elected vice chairman and chairman of the executive committee. Mr. Gordon is also president of the parent firm, A. V. Roe Canada Ltd.; Mr. MacDonald, executive vice president.

I. W. Gower was appointed director of research, **Botfield Refractories Co.,** Philadelphia. He was with the Research Dept. of Mexico Refractories Co.

Paul C. Diefenderfer, manager of the Escanaba, Mich., operations of **Harnischfeger Corp.,** was named to the new post of superintendent of excavators, Milwaukee.

Roy T. Omundson was elected a vice president, **Chemetron Corp.,** Chicago. He is president of the recently formed Cardox Div.

William H. Whyte was made sales manager, Tin Plate Div., **Steel Co. of Canada Ltd.,** Hamilton, Ont.

Frank J. Scott, former industrial engineering executive for the Erie, Pa., plant of Bucyrus-Erie Co., was named industrial engineer for **Bunting Brass & Bronze Co.,** Toledo, Ohio, a new staff position.

Walter F. Kaufman joined **Paulsen-Webber Cordage Corp.'s** Wire Rope Div., as vice president-manufacturing at the Sunbury, Pa., mill. He was chief rope engineer for Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp.

Dominion Bridge Co. Ltd., Montreal, Que., created four new regions, each controlled by a regional vice president operating from the Montreal head office. These appointments: **P. E. Savage,** eastern region; **Mackenzie McMurray,** Ontario region; **E. A. Ford,** central region; **R. J. A. Fricker,** western region. **Robert S. Eadie,** former vice president-manager of the eastern division, was appointed vice president and director of engineering, heading a newly created engineering services group. **George H. Midgley,** general sales manager, was named vice president and manager of the new marketing services group.

Evon Wells was made Philadelphia district sales manager, **International Resistance Co.**

E. R. Carey was promoted to assistant sales manager, regular products, **Dresser Mfg. Div.,** Dresser Industries Inc., Bradford, Pa. He was manager-general markets sales, and is replaced by **John P. Lord,** former business manager for welding fittings.

Dean W. Paul, general sales manager, **Janette Electrical Mfg. Co.,** Morton Grove, Ill., was elected a vice president.

Harold G. Brown succeeds **H. E. Heywood** (retired) as manager, general sales office, **National Supply Co.,** Pittsburgh.

Theodore L. Kishbaugh was made general manager of the Wallingford, Conn., plant of **Joseph T. Ryerson & Son Inc.** He succeeds **Charles H. Hallett,** who resigned to establish a business in California.

T. P. Bronco was made assistant to the general manager-sales, **Page Steel & Wire Div.,** American Chain & Cable Co. Inc., Monessen, Pa.

Charles Snyder was made general sales manager, **Stone Machinery Co. Inc.,** Manlius, N. Y.

B. K. Taylor was made St. Louis district manager, **U. S. Steel Supply Div.,** U. S. Steel Corp. He succeeds **Earl L. Simanek,** named Pittsburgh district manager for the division.

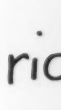
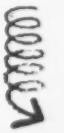
Jones & Laughlin Steel Corp. appointed **William F. Smith** chief chemist of the Aliquippa, Pa., Works, succeeding **D. J. Hallisey,** retired. **Milton Moses** was made assistant chief chemist.

Fred G. Outcalt was made sales manager, **Linde Dept.,** Union Carbide International Co., division of Union Carbide Corp., New York. **Dr. G. H. Wagner** was made director of research.

H. J. Siekmann was promoted to manager, market development and research, Metallurgical Products Dept., Detroit, **General Electric Co.**

Walter E. Stewart was appointed product engineering director, **American Welding & Mfg. Co.,** Warren, Ohio.

Wayne O. Vinson was appointed general purchasing agent, **American Laundry Machinery Co.,** Cincin-

If it rolls on an axle or turns in a bearing  or rides on a shaft if it slides in a groove or moves on a pivot if it bores  or cuts or transmits pressure

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C. E. PONKEY
Layne & Bowler president

DONALD W. OAKLEY
Metal & Thermit post

DONALD A. MACRITCHIE
Artisan Metal president

DR. CHARLES E. REED
GE Metallurgical Products mgr.

LAWRENCE H. HODGES
J. I. Case plant mgr.

CHARLES C. LIBBY
Fairbanks, Morse div. mgr.

nati, succeeding **John B. Patzold**, retired.

Dr. Charles E. Reed was named general manager of **General Electric Co.**'s Metallurgical Products Dept., Detroit. He succeeds **Kenneth R. Beardslee**, who becomes a consultant for the department. Dr. Reed was general manager, Silicone Products Dept., Waterford, N. Y., and is succeeded by **Jerome T. Coe.**

Val Heidenreich was appointed office manager, New York district sales office, **Allegheny Ludlum Steel Corp.**

Philip G. Renie fills the new post of staff manager of the Factory Engineering Dept., **Martin Steel Corp.**, Mansfield, Ohio.

Earl K. Schafer was made market research manager; **Fred J. DeBruzzi**, assistant to the sales manager, Bearing Div., Valparaiso, Ind., **McGill Mfg. Co.**

Louis C. Colleran was elected vice president-sales, **Roll Formed Products Co.**, Youngstown.

Lawrence H. Hodges was made manager, Rockford, Ill., Works, **J. I. Case Co.** He was chief product engineer of the works.

Charles C. Libby, former manager, Electrical Dept., Fair Lawn, N. J., branch of **Fairbanks, Morse & Co.**, was appointed manager of the Electrical Div. Now in the sales division headquarters at Freeport, Ill., he replaces **W. H. Kingsley**, resigned.

Becco Chemical Div., Buffalo, Food Machinery & Chemical Corp., promoted **Harlow G. Hyatt** to production co-ordinator for its two plants, Buffalo and Vancouver, Wash.; **Bartlett B. Wright** to production manager, Buffalo plant; **Roger L. Sullivan** to production superintendent in Buffalo.

R. D. Werner Co. Inc., New York, appointed **William B. Caldwell Jr.** manager of its Chromtrim Metal Moulding Div.; **G. Patrick Bingham**, product manager, Sink Frame Div.

C. E. Ponkey was named president of **Layne & Bowler Inc.**, Memphis, Tenn., to succeed **W. H. Reeves**, who continues with the company in a consulting capacity as a vice president. Mr. Ponkey was executive vice president. Other appointments: **J. G. Gordon III**, vice president; **F. T. Quinn**, vice president-manufacturing.

Donald W. Oakley was made general manager of **Metal & Thermit Corp.**'s newly integrated Coatings Div. Assisting him are: **D. R. Meserve**, sales manager; **F. L. Scott**, technical manager; **A. S. Pollock**, plant manager.

Donald A. MacRitchie, former vice president - general manager, was elected president of **Artisan Metal Works Co.**, Cleveland.

OBITUARIES...

Leo A. Behrendt, 62, vice president, **Joseph Dixon Crucible Co.**, Jersey City, N. J., died Feb. 11.

Daniel H. Haynes, 77, a vice chairman, **American Machine & Foundry Co.**, New York, died Feb. 28.

Henry B. Austin, 61, vice president, **Armstrong Bros. Tool Co.**, Chicago, died Feb. 26.

Albert J. Dempsey, 65, vice president, **Crucible Steel Castings Co.**, Milwaukee, died Feb. 25.

Stewart C. Hagen, 41, a buyer in the purchasing department of **Falk Corp.**, Milwaukee, died Feb. 18.

William E. Zipp, 58, vice president, **Ceco Steel Co.**, Cicero, Ill., died Feb. 21.

William I. Jones, 63, general manager of **General American Transportation Co.**'s plant in East Chicago, Ind., died Feb. 20.

Loren L. Hebberd, 71, chief engineer, **Ramtite Co.**, division of S. Obermayer Co., Chicago, died Feb. 19.

Durban Longenecker, 59, former president, **Toledo Pipe Threading Machine Co.**, Toledo, Ohio, died Feb. 16.

Robert W. Goetz, 62, purchasing agent, **Enos & Sanderson Co.**, Buffalo, died Feb. 20.

Cast Steel Tires That Help Build Highways–

67 tons of cast steel here!—a cement mill kiln tire 20 feet 7 inches in diameter. It's one of many such steel castings designed to bear the burden of making cement for your smooth super highways. Erie Forge & Steel Corporation has been making such heavy industrial steel castings in widely diverse shapes and sizes for over three-quarters of a century . . . steel castings for cement mills, rolling mills, blast furnaces, presses, hammers, turbines, ships at sea and industrial machines. Every operation, from scrap pile to finished cast steel part on the shipping dock, is quality-controlled by experienced metallurgists, engineers and skilled craftsmen. It will pay you to consult with us as your supply source for quality cast steel components.

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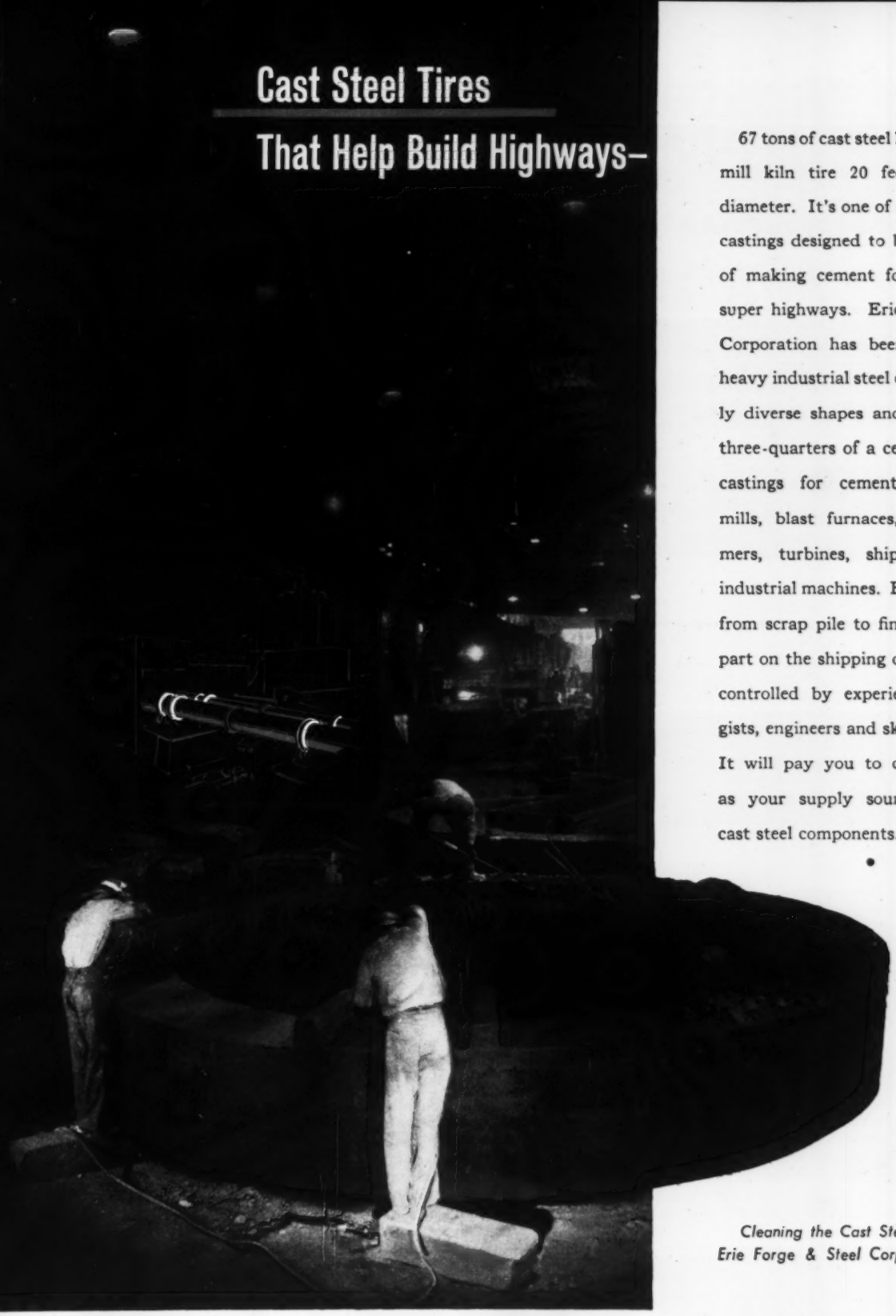


Cleaning the Cast Steel Kiln Tire in Erie Forge & Steel Corporation foundry.

ERIE FORGE & STEEL CORPORATION

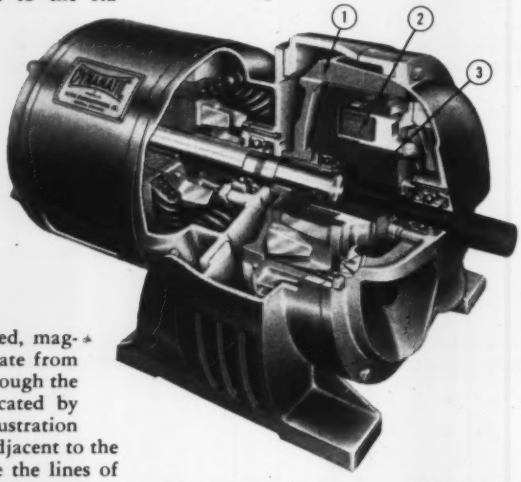
ERIE, PENNSYLVANIA

HOW DYNAMATIC® Drives Provide Infinitely Adjustable Speed with AC Power

Dynamatic Ajusto-Spede® and Dynaspede® Drives operate from an alternating current power source and are infinitely adjustable from zero RPM to full output speed. Accurate control of output speed is obtained by varying the current in a single field coil.

Each Dynamatic Drive consists of a constant speed AC motor and an eddy-current coupling. Torque developed in the motor is transmitted through the coupling by electromagnetic attraction between its driving and driven members.

The driving member, or drum (1), is mounted on the end of the motor shaft and surrounds the rotor, or driven member (3). The drum is free to rotate independently of the rotor until current is applied to the stationary field coil (2).



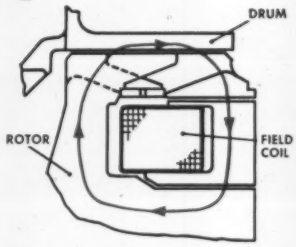
1. Input Drum Assembly
2. Stationary Field Assembly
3. Output Rotor Assembly

As the field coil is excited, magnetic lines of force emanate from the field coil and flow through the rotor and drum as indicated by arrows in cross-section illustration (A). Poles on the rotor adjacent to the smooth drum concentrate the lines of force into localized areas of "high flux" density in the drum's inner surface, shown in illustration (B). As the drum rotates about the rotor, these high flux areas sweep the inner surface of the drum, causing a variation of flux density that generates an eddy-current field in the drum's inner surface. Magnetic attraction between this eddy-current field and the rotor poles causes the rotor to rotate with the drum.

The torque transmitted from the drum to the rotor varies with the current applied to the field coil and with the "slip", or difference in speeds between the drum and rotor. Speed control with eddy-current equipment is obtained with a control system that adjusts field coil current to deliver the required torque at the desired slip.

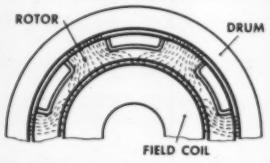
The control systems used with Dynamatic Eddy-Current Equipment operate on alternating current and require no special power source. Because of the low power required for field coil excitation, rectifying of field coil current is easily accomplished electronically. Expensive motor-generator sets are not required.

The control features available with Dynamatic Eddy-Current Equipment include constant speed regulation, acceleration control, torque regulation, cascading of multiple units, inching and threading, and numerous others as required by individual applications. Dynamatic Eddy-Current Equipment is ideally suited to automatic control.



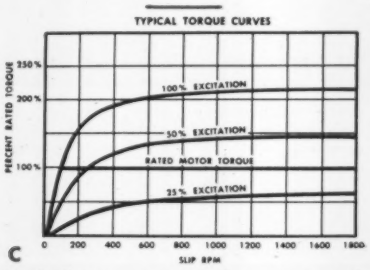
A

Flow of magnetic lines of force through rotor, drum, and stationary field.



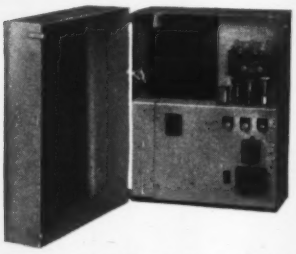
B

Concentration of magnetic lines of force by the rotor poles.



C

Typical torque curves show torque at various values of excitation. The horizontal line is rated motor torque.



D

The electronic control systems used with Dynamatic Eddy-Current Equipment do not require a special power source or motor-generator sets.

Send for your copy of Bulletin D-582 which gives detailed information on Dynamatic Eddy-Current Equipment.

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Bennett Mining Changes Hands

Pittsburgh Steel gains control; expansion of pellet capacity is planned by Humboldt firm

TWO NOTEWORTHY events have occurred on the iron ore front:

Pittsburgh Steel Co., Pittsburgh, gained control of Bennett Mining Co., Hibbing, Minn.

Humboldt Mining Co., Humboldt, Mich., announced plans to double its pellet capacity.

Pittsburgh Steel acquired a 78 per cent interest in Bennett by buying the holdings of Bethlehem Steel Corp., Bethlehem, Pa., and Youngstown Sheet & Tube Co., Youngstown. Interlake Iron Co., Cleveland, retains the balance. Pickands Mather & Co., Cleveland, will operate the property.

The purchase, to be paid over a four year period, will enable Pittsburgh Steel to obtain 40 per cent of its ore requirements from its own mines.

Included in the property is a three year old beneficiating plant capable of producing coarse or fine grades.

Humboldt Mining will double its capacity to make iron ore pellets to about 640,000 tons annually with the addition of a 2000 ton per day plant. Arthur G. McKee & Co., Cleveland, has been retained to build it.

Scheduled for completion by mid-1960, the plant will make commercial use of the grate kiln process in producing pellets from concentrates containing over 60 per cent iron. The pellets can be charged directly into the blast furnace without additional processing.

The Humboldt properties are operated by Cleveland-Cliffs Iron Co., Cleveland, joint owner with Ford Motor Co.

Brick Capacity Increased

Kaiser Chemicals Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif., is expanding the basic refractory brick capacity at its Columbiana, Ohio, plant for the second time in three years. Purpose: To meet increased demands for the division's products, particularly those for all basic, open hearths.

When completed late this year, the Columbiana facility and Kaiser's Moss Landing, Calif., plant will have a combined annual capacity of 200,000 tons of basic refractory brick and mixes.

Talco Gets Catapult Jobs

Two contracts (worth over $500,000) for the development and production of rocket catapults for aircraft emergency escape systems have been awarded Talco Engineering Co., Mesa, Ariz., a Gabriel Co., Cleveland, subsidiary.

One catapult is for the B-70 and the F-108 under development by North American Aviation Co., Los Angeles. The second is for use with newer versions of the B-58 being delivered to the Air Force by Convair, Ft. Worth, Tex.

Techline Opens New Lab

Techline Div., Wheelabrator Corp., Vicksburg, Mich., opened a new chemical laboratory for research and development on barrel finishing compounds.

Kollsman Motor Formed

Standard Coil Products Co. Inc., Melrose Park, Ill., has formed Kollsman Motor Corp., a wholly owned subsidiary. Kollsman will design and manufacture special purpose precision electric motors.

New Penn Machine Division

Penn Machine Co., Johnstown, Pa., established an Industrial Div. to produce gears and other machined metal parts for general industry. Penn Machine will continue to make gears and other replacement parts for the mining industries.

Porter To Make Moldings

H. K. Porter Company, Inc., Pittsburgh, has organized a Mouldings Div. to manufacture the complete line of automotive and other metal moldings formerly produced by Herron-Zimmers Moulding Co. Porter recently purchased the Herron-Zimmers plants at Detroit and Frankfort, Ky.

Kennecott Expands

Kennecott Copper Corp., New York, plans to spend $90 million for expansion and modernization this year. It is part of a $172 million program initiated last year.

Circo Ultrasonics Formed

Circo Ultrasonic Corp., Clark, N. J., has been formed by Circo Equipment Co., cleaning equipment manufacturer. The new corporation will make ultrasonic cleaning devices.

AMF Changes UK Name

American Machine & Foundry Co., New York, has changed the name of its United Kingdom subsidiary from Industrial Machinery Co. Ltd. to AMF Ltd. George M. R. Lord is general manager.

CONSOLIDATIONS

Howell Electric Motors Co., Howell, Mich., has acquired **Ohio Electric Mfg. Co.**, Cleveland, and its wholly owned subsidiary, **Kingston-Conley Inc.**, Plainfield, N. J. The new corporation will operate under the Howell name, but Ohio and Kingston-Conley trademarks will be retained.

The firm produces industrial, gear, elevator, fractional horsepower, punch press, and special design motors, bench grinders, lifting and separation magnets, and magnet control equipment.

Erie Meter Systems Inc., purchased last year by **A. O. Smith Corp.**, Milwaukee, will be merged with the parent company. It will become part of the new **Smith-Erie Div.** which includes the meter and service station pump divisions at Los Angeles. The Erie, Pa., plant and its personnel will continue without change.

Eastern Malleable Iron Co., Naugatuck, Conn., has purchased **Danforth Anchors**, Berkeley, Calif.

YEARS OF PROFITABLE PRODUCTION

BUILT INTO

"BUFFALO"

NO. 18 DRILLING MACHINES

These drills are constructed to provide the longest possible useful life and the utmost accuracy in operation. Easy to set up and operate, the rugged, dependable No. 18 is designed to cut production costs in a wide variety of operations.

Quality Features of the "Buffalo" No. 18 Drill:

- **SPINDLE** — Multiple-splined alloy steel, ground, polished and carefully balanced. Rotates in two precision-type ball bearings, designed to take the thrust of heavy-duty operations. Design of spindle pulley bearings prevents torque being transmitted directly to spindle.

- **FRAME** — Large, heavy head frame insures accuracy throughout life of machine.

- **TABLES AND BASES** — Built to extra-heavy proportions, with large working surfaces.

- **RAISING SCREW** — Full ball bearing construction, actuated by machine-cut steel screw and gears. Three ball thrust bearings provide easy operation.

- **FOOT FEED** — Operated by a gear meshing the feed pinion. Foot treadle return by torsion spring, giving maximum return pressure at end of stroke.

For capacities up to 1" in cast iron, the "Buffalo" No. 18 Drill is your best buy. Available in floor and bench models — bench types up to 6 spindles.

Contact your "Buffalo" machine tool dealer for full information on the No. 18 Drill, or write us direct for Bulletin 3123-E.

Every "Buffalo" Machine Tool brings you the exclusive "Q" Factor—the built-in QUALITY which provides trouble-free satisfaction and long life.

ESTABLISHED 1877 "Buffalo" MEMBER N.M.T.B.A.

BUFFALO FORGE COMPANY

158 MORTIMER STREET • BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING PUNCHING SHEARING BENDING

REBUILDS WAYS—A single application of an epoxy resin is adequate for building up worn ways and tailstocks when only a few mils of thickness are needed, says Larry Fagin, Frost Rebuilding Co., Los Angeles. Some compositions contain graphite as a built-in lubricant. Lathes, planers, and milling machines can be rebuilt higher than 4 mils with a Micarta filler.

MORE ALUMINUM CANS—The Navy is using deep drawn aluminum cans (quart size) to store synthetic lubricating oil for jets, says Kaiser Aluminum & Chemical Corp., Oakland, Calif. They weigh two-thirds less than conventional containers, and side seams and bottom double seams are eliminated, a feature which lessens the possibility of contamination. Bottoms fit over tops to save shipping space.

REVISE TWIST DRILL STANDARD—The American standard for twist drills (B5.12) has been revised by the American Standards Association, New York. Additions: Combination drills and countersinks; selected sizes of millimeter drills; screw machine length drills; and an appendix listing drills by decimal sizes. Changes: Drill names (to eliminate confusion). Deletions: Automotive drills. Copies ($2) can be obtained from the standards society or the American Society of Mechanical Engineers, New York.

TEXTURE-TONE STEEL—A new kind of steel combines a plated reflective surface, a variety of textures, and a hard, transparent coating. The result is a novel metallic appearance like anodized aluminum, says Ardmore Products Inc., Roselle, N. J. Cost: 12 cents a square foot.

DIECASTING COMPETITOR—Parts made from Du Pont's new plastic, Delrin, are expected to compete with their aluminum, zinc, or brass counterparts. In trials, auto engine components made of the material lasted the life of the car. Properties: The plastic is similar to metal—dense and highly crystalline; its tensile strength is 10,000 psi at room temperature (it gets stronger at low temperatures; operating ceiling is 250° F); its melting point is 347° F; and it's light. Say the Delrin part weighs 2 ounces. Here's the weight of comparable parts made with metals: Aluminum, 3.7 ounces; zinc, 9.3 ounces; brass, 12.3 ounces. Although raw material cost is higher than that of metals (95 cents per pound in truck loads), savings come through elimination of machining, says Du Pont.

BETTER MAGNET METAL—An alloy of cobalt and platinum is said to have remarkable physical and magnetic properties (residual magnetism 6400 gauss; coercive force, 4800 oersteds). Heat treatment is necessary, and it has similar properties in all planes. The alloy is comparatively workable before heat treatment. Main uses: Magnets with extremely small or complex shapes. It's made by Johnson, Mathey & Co. Ltd., London, says *Welding & Metal Fabrication*, London.

ZIRCONIUM CORROSION RATING—Fifteen months of corrosion testing in 145 types of environments have shown that zirconium really demonstrates its benefits in dry chlorine, strong alkalis, and conditions that alternate between strong acids and strong alkalis. The tests covered 2300 specimens of some 40 corrosion resistant metals. The testing firm, Columbia-National Corp., Cambridge, Mass., will report its results next week at a Chicago meeting of the National Association of Corrosion Engineers.

ELECTRON BEAM WELDING GAINS—Commercial versions of vacuum furnaces which apply the electron beam principle to single production jobs are beginning to appear. Air Reduction Sales Co., New York, announced its first version. The British (Edwards High Vacuum Ltd., London) also have one that is similar. Advantages: Weld metal is purer than base metal; since the device operates in a vacuum, it joins sensitive metals like molybdenum and titanium without danger of contamination; weld contours are exceptionally smooth, an added feature where stress concentrations are involved.

Interior view of unsteady state arc furnace showing a casting produced

Reactive Metal Melting Furnace Eliminates Water Cooling Hazard

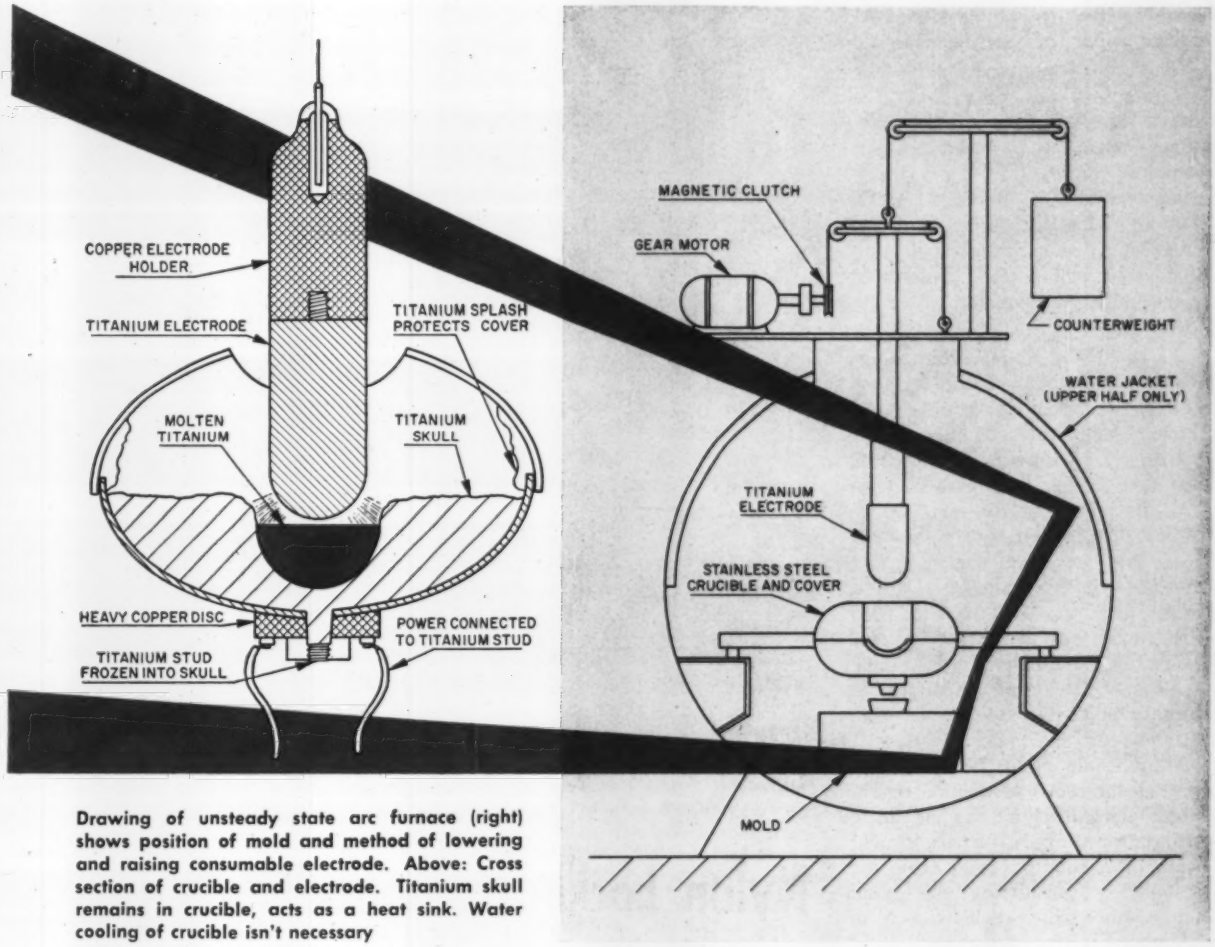
A heavy skull maintained in the crucible acts as a heat sink to handle the heat generated during melting. It eliminates costly and complicated cooling systems

By M. L. TORTI
Project Manager
and
JOHN L. HAM
Research Associate
National Research Corp.
Cambridge, Mass.

A NEW CONCEPT in vacuum arc, skull melting may bring down the cost of processing highly reactive metals and eliminate a hazardous condition.

It combines a rapid melting cycle with a heavy skull and crucible to handle the heat transferred during melting. Costly and complicated cooling systems are not needed; there is no danger of water-reactive metal explosions.

• **Conventional Method**—The vacuum arc skull furnace has been widely used for melting and shape casting reactive metals. Melting is done with a high current electric arc that is struck between the metal in the crucible and a consumable electrode of the same metal. The crucible is generally copper, cooled by copper water coils brazed to the crucible, or by a water jacket.



Drawing of unsteady state arc furnace (right) shows position of mold and method of lowering and raising consumable electrode. Above: Cross section of crucible and electrode. Titanium skull remains in crucible, acts as a heat sink. Water cooling of crucible isn't necessary

When sufficiently high power is used, all the consumable electrode and the scrap in the crucible melt; the entire charge is then poured. While the procedure gives good results, there is always the danger of a water leak which may be disastrous if a large volume of metal is molten. As a precaution, melters have used remote controls and barricades, with carefully designed crucibles and cooling systems.

• **New Concept**—Since roughly 1 lb of titanium can be melted per minute per 1000 amperes, a 50 lb melt can be completed in 5 minutes using 10,000 amperes. Thus, the short cycle time and the generally low thermal conductivity of the reactive metals make it possible to use an unsteady state (or heat sink) concept for the crucible to eliminate water cooling.

In a prototype of the new furnace, the crucible is a shallow, stainless steel bowl, ¾ in. thick, 8 in. deep, and 22 in. in diameter. Its interior is sprayed with alumina. A good electrical ground is assured by a heavy titanium stud which extends from the skull through a hole in the crucible to the electrical connections. A stainless steel cover was used.

• **Cooling** — The furnace tank is double walled. Water cooling is restricted to the area above the level of molten metal in the crucible. The electrode holder is a solid piece of copper, forged to a 4 in. diameter lower section and a 2 in. diameter neck about 4 ft long. Water circulates through a hole drilled the entire length of the holder. The water is separated from the liquid metal by several inches of solid copper, and no brazed or welded joints are used.

The electrode is positioned by a variable speed, direct current drive. The rapid retraction necessary for quick pouring is obtained by releasing a magnetic clutch, which allows the heavily counterweighted electrode to retract rapidly.

• **Permanent Skull**—The prototype furnace has been used for a campaign of about fifty 20 lb titanium alloy castings with no attention to the skull except for an occasional clearing of the pouring lip. The skull is a titanium alloy containing 6 per cent aluminum and 4 per cent vanadium. It weighs about 250 lb.

Melting was done with a 3 or 4 in. diameter titanium electrode of the same composition as the skull, carrying 8000 amperes for 2 to 3 minutes. Furnace pressure was kept below 5 microns. About 5 lb of scrap was put into the bottom of

the crucible to be melted and poured with the virgin metal.

The 20 lb pours used for the testing programs do not seem to approach the limit for the unit. Adequate superheat was obtained for complete filling of intricate shapes using expendable graphite molds. The interior of the empty skull was essentially hemispherical, indicating that the crucible could be deeper and smaller in diameter.

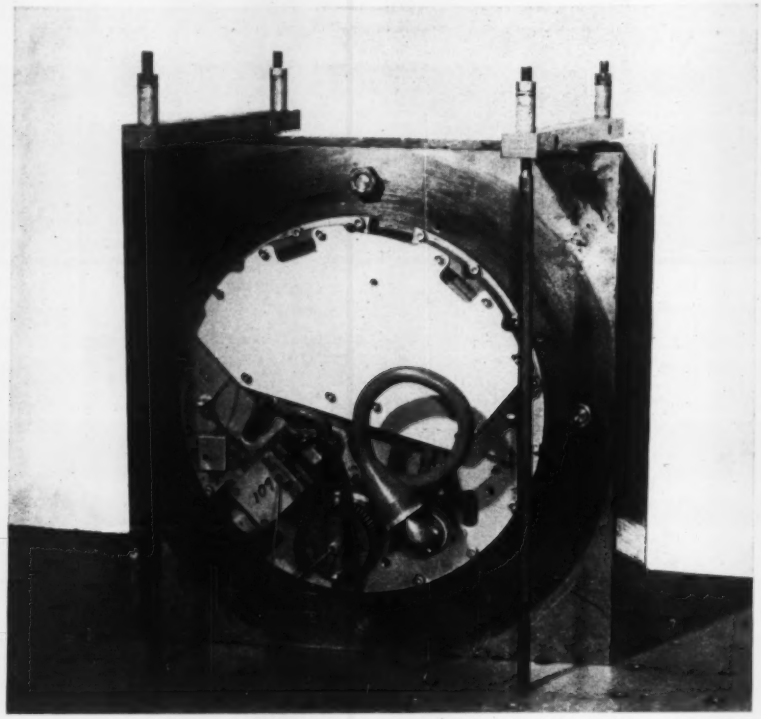
• **Heat in Crucible**—Temperature at several positions of the stainless crucible was recorded continuously during and after melting and pouring. Less than 20° F rise was recorded during the melting cycle, but after the pour the temperature of the surface continued to rise for about an hour until the skull and crucible reached thermal equilibrium at 200 to 300° F. After that, the crucible cooled slowly by radiation and conduction. The thick skull eliminated any possibility of contamination from the crucible.

The unsteady state concept of melting could easily be applied to a semicontinuous production operation. Several pours can be made without opening the furnace if mold locks or a rotating mold table are installed. Considering the small temperature rise, at least four to six pours could be made in rapid succession before the crucible begins to heat excessively.

• **Production Work**—If continuous operation is desired, an auxiliary cooling unit could be attached to the crucible. If power is removed after melting (it takes about 5 minutes to melt the charge and electrode) and is left off for 30 minutes to an hour, then a cooling unit with considerably lower cooling capacity than a water system could maintain the crucible at a safe temperature.

Air or inert gas circulated through tubing attached to the crucible would have sufficient heat removal capacity. In any case, it would not be necessary to use water.

The requirements for the unsteady state crucible are much less stringent than for either a water or radiation-cooled crucible. Cast iron should be quite satisfactory, since neither exceptionally high temperature strength nor high thermal conductivity is required.



Depth bomb subassemblies, with nylon-locked fasteners, underwent punishing tests

Nylon Locked Fasteners Pass Test

They may serve you as well as Navy, which has chosen them for new depth bomb. In everyday applications, they can be removed and re-used without loss of locking action

RELIABLE threaded fasteners are a must if you have to disassemble equipment frequently for inspection, then reassemble it.

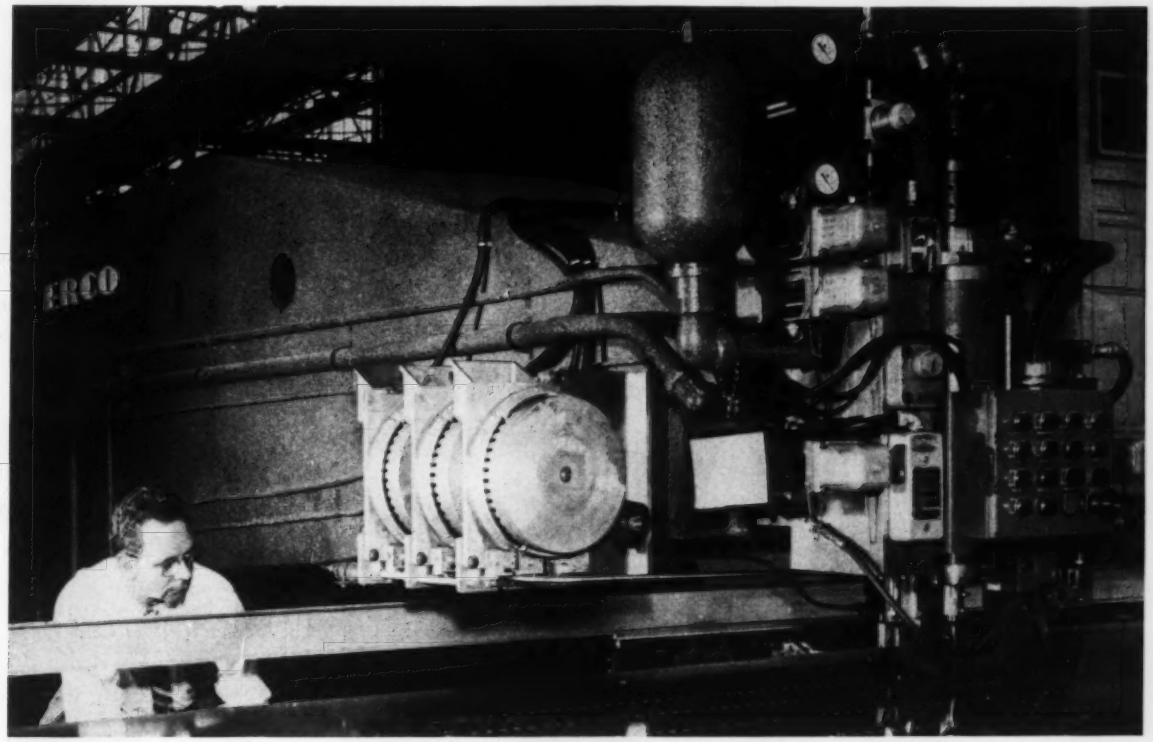
A type of male threaded fastener, with a small nylon pellet embedded in the threads to provide locking action, has been chosen for use in a new, aircraft-launched depth bomb.

The fastener has undergone two years of exhaustive testing at Naval Ordnance Laboratory, White Oak, Md. The tests, under the direction of Daniel Finelli, mechanical engineer at the laboratory, will assure weapon reliability.

• **Passes Tests**—None of the nylon-plugged screws failed in tests to pre-established standards set up by engineers. They are re-usable, with no significant loss of locking action.

Before they were approved for use in the antisub weapon, the screws withstood water entry tests, in which assembled depth bombs were dropped from aircraft, hitting the water at 500 to 2000 Gs.

The fasteners endured 240 hours of flight, in which they were subjected to extreme vibration. There was no loss of locking action after 15 removals, with 24 hours of vibration after each removal. The fasteners withstood 78 hours of vibration in which the temperature was varied from −65 to 165° F; they didn't fail in three separate, 1084 hour vibration tests.



As the tapered wing skin travels through the machine, the correct length rivet is picked from one of three hoppers (center), inserted in the readied hole, headed, and shaved

Riveters Speed Jet Assembly

Automatic machines do seven fastening jobs at Convair. They can pick rivets of the proper length from three hoppers. The hand finishing job is eliminated

THREE automatic riveting machines are being used in the assembly of jet airliners (the 880 and 600) at Convair, a division of General Dynamics Corp., San Diego, Calif.

The machines were developed to Convair specifications by the Nuclear Products-Erco Div., ACF Industries Inc., Riverdale, Md.

A. E. Hill, works manager at Convair's plant No. 1, says the riveters are designed to do a complete job on wing and fuselage skins and stringer panels with no loss of speed. Hand finishing is eliminated.

The three machines work on wing panels; a fourth (now being installed) will process fuselage panels. Cost of the machines, associated tooling, and controls is $442,896.

• **Job**—The machines will:

1. Clamp a stringer to the aluminum alloy skin panel with 500 psi pressure.
2. Drill and countersink the holes.
3. Insert the rivet.
4. Head the rivet with a 15,000 lb squeeze.
5. Shave the rivet head.
6. Unclamp and air blast chips away from the work area.
7. Move the skin and panel to the next rivet location.

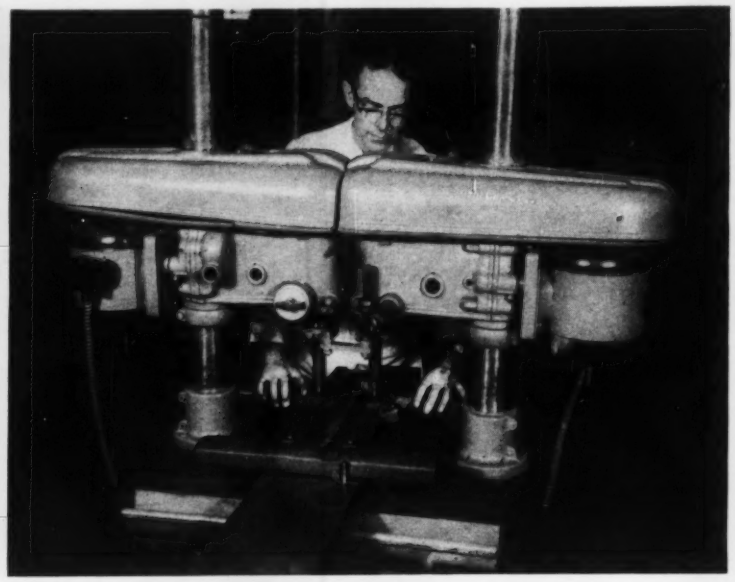
These steps overlap; shaving the rivet head flush with the skin takes no extra cycle time.

• **Production**—At a rivet spacing of 1 in., and with a thickness of $\frac{3}{8}$ in., the machines operate at 12 rivets per minute.

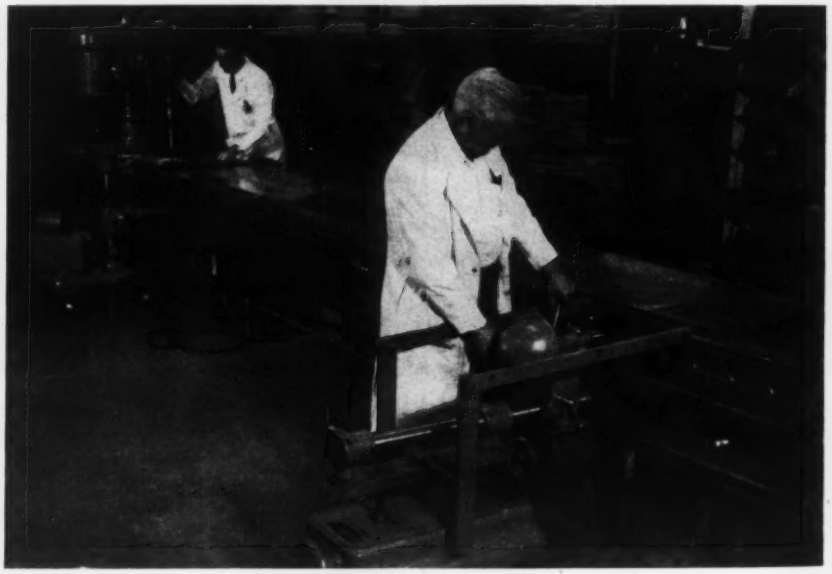
A template at the side of the machine helps locate rivet positions. The machines select the proper length rivet from one of three hoppers.

Panels are assembled in stationary fixtures where Scotchweld adhesive film also is applied. Stringers are held in place with tack rivets. Then the panels are placed in the holding fixtures which operate on the worktable designed for use with the machines.

Convair uses a special Straylor rivet for wings to make a metal-to-metal seal. It's necessary because the wings double as fuel tanks.



Two drill presses face each other across a single table. They are tooled to rout the lubricant grooves in the part. Pattern of the grooves is generated by a milled slot in the fixture (at left) that follows a set of roller guides



Two caster-mounted drill presses, one vertical and the other horizontal, drill dowel and mounting holes in machine table sections

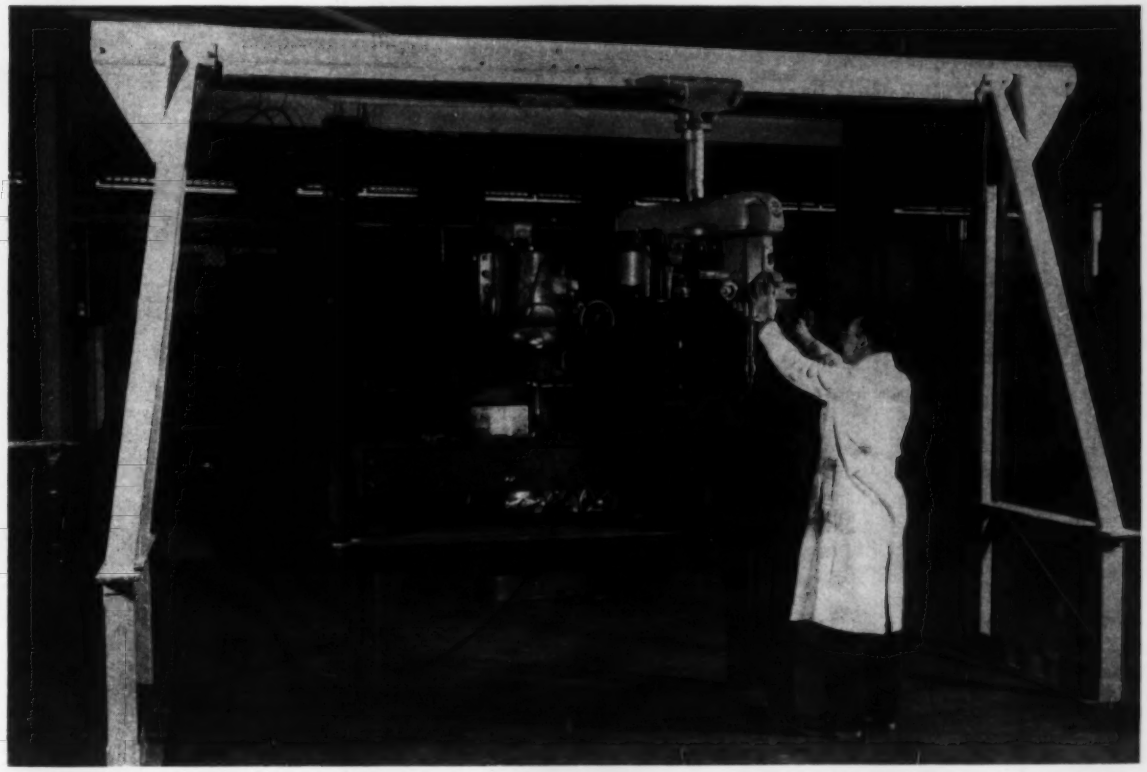
You Can Get Extra Mileage Out of Your Drill Presses

That's the advice of a machine builder who has come up with a variety of applications in his plant. He also uses the tools for work ordinarily reserved for other machines

PRODUCTION men at the Bellefontaine Div., Rockwell Mfg. Co., Bellefontaine, Ohio, have more than a passing interest in drill presses. They make them and also use them.

They feel that they've proved a point: A drill press can be one of metalworking's most versatile manufacturing tools.

In addition to standard work, including drilling, reaming, tapping, and spot-facing, the division's machines have been tooled to grind,



Operator uses a suspended machine to drill a lathe table. The span permits the spindle to reach the middle of large panels or assemblies

This ten-spindle drill press lets an operator complete a series of operations in one setup. Four heads (two at each end) have power feeds, so an operator can start the cycle then work at another machine on a separate operation

polish, mill, rout, and do other jobs normally left for special units.

• **Groove Milling** — For example, lubricant grooves are cut in a machine component. The job is done by two drill presses that face each other across a single table. The distance between the spindles is equal to the distance between grooves on the finished part.

A two-piece jig guides the part under the routing cutters. The bottom part of the jig, bolted to the worktable, has two guide rollers in its center. The top half of the jig has a milled slot that's the same shape as the grooves to be machined in the part. The slot in the jig rides the rollers, providing the contour travel for the part.

• **Portability**—John H. Diehl, Bellefontaine Div.'s general manager, says you can add a great degree of versatility to the machines by simply making them portable. "A number of our machines," he says, "are mounted on casters so they can be moved into place as needed."

Case in point: Two portable drill presses cut dowel and mounting holes used to join worktable sections. The tables (for multiple-spindle drill setups) are assembled and drilled to customer specifications. With portable drill presses, the whole job is done in one setup.

One machine is mounted hori-

zontally on a platform that rides on casters. It drills dowel holes in table edges. The operator rolls it up to the conveyor that holds the workpieces. Two brackets are dropped in place; they hold the press steady during drilling.

The other machine drills vertical mounting holes. It is also mounted on casters. Its column is offset so it will reach over the work, and the table is positioned under the conveyor table to give adequate support during drilling. The platform is weighted to counterbalance the load of the drill press when it is extended over the work.

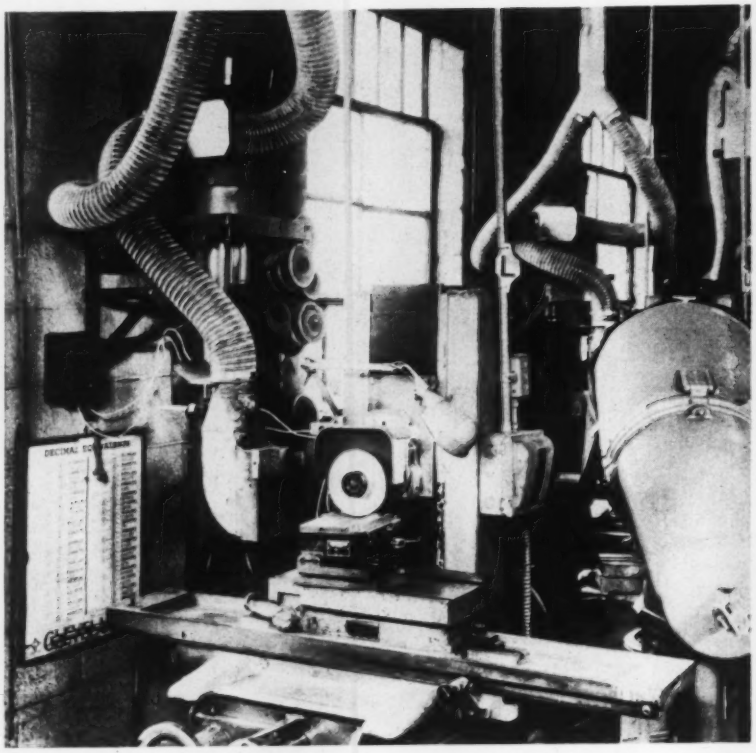
Mr. Diehl cites another example where four drill presses (mounted in pairs) are set up near an automatic milling machine. The operator puts one part in the milling machine and starts the cycle. Then, while the milling machine goes ahead with its work, he uses the drill presses to drill and tap four holes in a milled part. Instead of doing one job, the operator is completing nine.

• **Machine Team**—Mr. Diehl says: "The simplest setup we have for getting drill press versatility is a ten spindle, one table machine on which we drill several hundred different parts that are produced in quantities too small to justify a permanent setup." The setup has standard machine heads and table sections.

Two or three operators work at the machine, passing the work from one spindle to the next. The work can be one, 10 step job, or two or three jobs requiring fewer operations. With automatic feed units on four of the spindles, an operator can start the first step and go on to second and third operations on other parts while the first spindle completes its cycle.

A final example of extending the range of the drill press: Mr. Diehl's production men use an overhead machine for drilling large panels, lathe beds, assemblies, or machine tables. The standard head is suspended from an overhead track, 12 ft long. The whole machine unit, including track and A-frame supports, can be moved from one department to another.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*



Centrifugal collectors, mounted on the wall to save floor space, reclaim diamond dust from tool grinding operations at Tungsten Carbide Tool Inc., Detroit

Centrifugal Separators Recover Diamond Dust

Collection of grindings returns almost one-fifth the cost of abrasive wheels; bypass in ductwork permits use of diamond or other wheels on same machine

IF DIAMOND abrasive wheels are used in your plant, you can save an amount almost equal to one-fifth their cost by recovering the grindings.

Several centrifugal collectors reclaim diamond dust from grinding operations at Tungsten Carbide Tool Inc., Detroit. They were purchased from Torit Mfg. Co., St. Paul.

• **Compact, Inexpensive** — The units require no filters. They take little space and weigh only 65 lb each. Priced under $200, each unit costs no more than the average diamond grinding wheel.

Collectors used at Tungsten Carbide Tool are mounted on the walls. They can also be mounted on machinery, suspended from the ceiling, or placed on tables that take little more than 2 sq ft of floor space.

• **Proper Use Important** — Recovery of diamond particles is not practicable if they are mixed with other materials.

The Detroit firm recommends a bypass arrangement in the ductwork, so diamond and other abrasive wheels can be interchanged.

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NEW *all new* because this new method of construction results in strength to spare...a reserve of strength which combined with vibration-free running, results in greater drive efficiency.

NEW *all new* because U. S. Royal V-Belts feature perfect matchability. Born matched, they stay matched.

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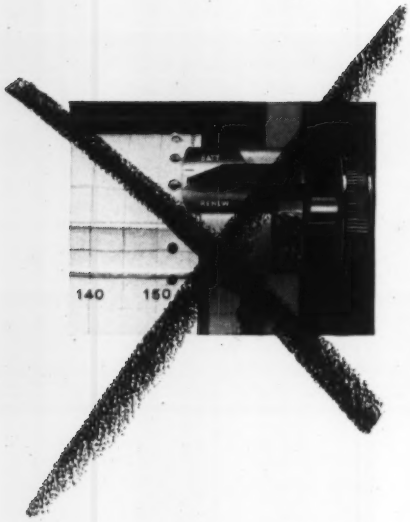
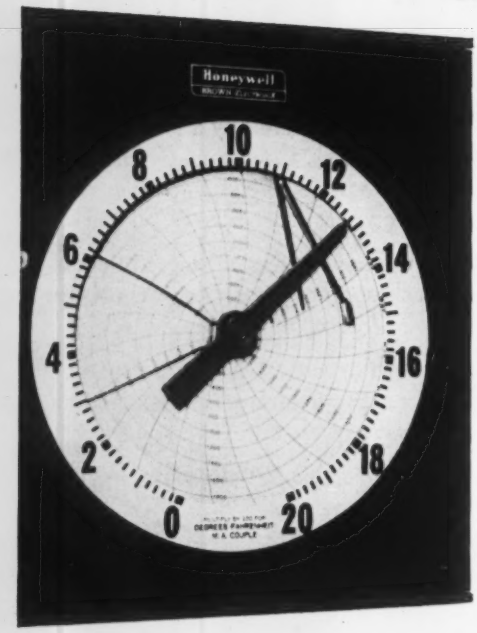


NOW! no batteries or standard cells in *ElectroniK* potentiometers



The new Honeywell Continuous Voltage Stabilizer makes batteries, standard cells, and standardizing mechanisms unnecessary in new Brown *ElectroniK* circular or strip chart potentiometers. This new unit accurately regulates the D-C reference voltage supply to the measuring circuit. Standardization is no longer necessary.

The small compact stabilizer unit uses Zener diodes and an ambient temperature compensator to deliver a constant rectified voltage from line supply. This enables the instrument to respond to changes in the measured variable without interruption.

Each Continuous Voltage Stabilizer means more dependability, less maintenance, continuous attention to the measured variable, and still another reason why *ElectroniK* instruments are your best value in measurement and control. Get complete details from your nearby Honeywell field engineer . . . he's as near as your phone.

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H HONEYWELL *First in Control*

Coil and swatches of vinyl coated steel illustrate how the scope of steel is being broadened through research and development

A SPECIAL REPORT
STEEL
March 9, 1959

Warmth of Color and Feel Added to Strength of Steel

THE IMAGE of the steel industry and its product is changing.

It's evolution by design, rather than accident. Industry executives know that there's magic in the word steel. It conjures the image of a stable industrial giant with a product that has strength and utility. But they realize that such a reputation has its debit as well as its credit side.

Rightly or wrongly, an industry that has arrived is caricatured as one that is not overly aggressive in research and development.

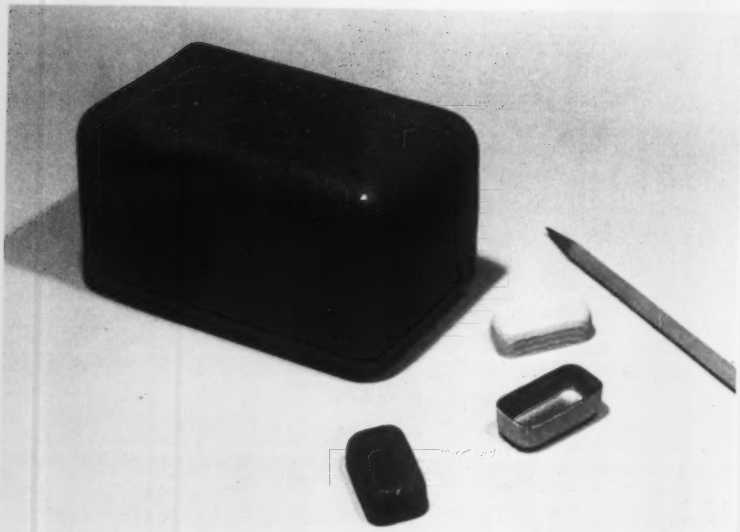
Rightly or wrongly, steel as a product is caricatured as the construction material of skyscrapers, bridges, ships, and tanks. It is not fully appreciated for its contributions to the comforts of everyday living—at home, at work, or at play.

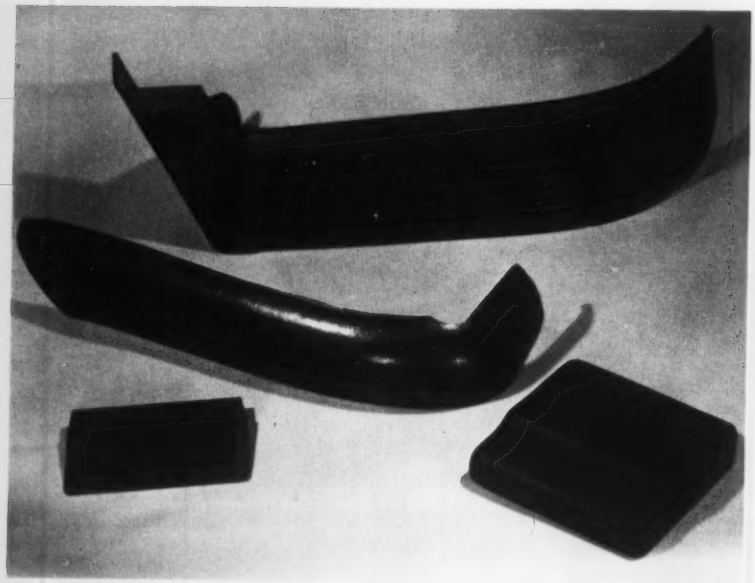
Progressive steelmakers are working hard to change the industry's image in those areas through stepped up research and development and product promotion. U. S. Steel Corp., for example, is promoting the product with its LBW campaign: "Today's steels *lighten* your work, *brighten* your leisure, *widen* your world."

U. S. Steel's vinyl coated sheets are an example of what is being done through research and development. The new product adds the styling versatility of color and texture to the strength of steel.

You can buy the material in any color you specify and in any texture that can be engraved on a roll. Unlike most plastic coated materials, it's not produced by lamination. U. S. Steel cures and bonds liquid plastisols to the metal in a continuous mill coating process. Result: A 100 per cent bond that will stand up under rigorous forming.

• **Test Marketed**—U. S. Steel's new product was born in a research laboratory several years ago. It has been test marketed for the last two





FORMABILITY: The material retains a complete bond even after severe drawing or forming into finished products like the box and parts shown above. You can shear, slit, punch, lock seam, stamp, draw, or roll form it without damage to the coating or change in color. It will withstand elongation of 30 per cent.

FASTENING: You can fasten it in almost as many ways as you do steel. Methods include: Nut and bolt, sheet metal screws, rivets, lock seam, entrapment, spring clip, steel-to-steel adhesive, vinyl extrusion, vinyl-to-vinyl adhesive, staple, tab, and crimp.

WELDING: You can weld the sheets on a production basis, but time, energy, and pressure must be controlled to avoid damage to vinyl. Since vinyl is an insulator, current flow must be regulated from back side.

years. A number of companies are already using the material in such products as portable electric heaters, room coolers, movable wall partitions, folding chairs, office tape dispensers, and doors.

At present, medium size appliances (heaters, coolers, fans, radios, and portable television receivers) constitute the biggest potential market. Reasons: 1. Their consumer appeal is enhanced. 2. They have a high degree of flexibility in fabrication. Major and minor appliances may be substantial consumers in the future.

Other potential markets include: Automotive (passenger car, station wagon, truck, and bus interiors); architectural (walls and room dividers); institutional furniture (school lockers, desks, chairs, radiator covers); office equipment; and surface and marine transportation.

• **Exterior Applications**—The product is primarily intended for interior use, but it may be suitable for some outside applications. U. S. Steel has been subjecting it to exposure tests for four years. Preliminary findings indicate that it will resist fading and corrosion as well as painted metal, but more experience is needed. If it will keep its appearance for six or seven years, it might be used for automotive roofs, hoods, or side panels.

• **Selling Points**—Richard B. Lord, the corporation's director of product development, cites these advantages of vinyl coated steel: 1. It's decorative because of its color and texture. 2. It's tough mechanically (resists abrasion and scratches), chemically (resists stain and corrosion better than most paint finishes), and electrically (has a dielectric strength of 750 volts per mil of coating thickness). 3. It has the "feel" of leather or tweed materials, a far cry from cold metal. 4. It deadens sound. 5. It's easily cleaned. 6. It's prefinished, expedites in-plant operations. 7. It can be formed or deep drawn without damage. 8. It's economical (usually costs less than plastic laminates, solid plastics, porcelain enamel, stainless steel, anodized aluminum, certain woods, and some upholstery.

• **Way To Sell More Steel**—The corporation's market objectives are twofold: 1. To resist the inroads

of nonferrous competitors. 2. To create new markets for steel.

Explains Bay E. Estes Jr., U. S. Steel's vice president, marketing: "We recognized that new competitive challenges in our market place were being felt from many nonferrous sources. New plastics, such as high-impact styrene, linear polyethylene, and the versatile phenol resins, were capturing some of the markets we had traditionally enjoyed for many prewar years. In addition, aluminum, plastics with reinforced glass fibers, pressure-processed wood products, and many other innovations were daily increasing the threats to our long accepted steel applications."

• **How It's Made** — U. S. Steel makes the product on a single line at its Irvin Works in Pittsburgh. Here's how: 1. A coil of cold-rolled or galvanized sheet is fed into a cleaning unit where all traces of foreign material are removed. 2. It moves into an electrochemical treating unit where a slight etching of the surface occurs and a slight chemical deposit is made. 3. It's roller coated with a thin film of thermosetting adhesive. 4. It passes over another roller coater where a primer material is applied to the reverse side as a corrosion protection. (This step may be eliminated if not required by the customer.) 5. The adhesive and the reverse surface protection are simultaneously cured in an oven. 6. Liquid vinyl is applied by a reverse roller coater and cured on the steel to produce a permanent bond. 7. While still hot, the sheet passes through embossing rolls where the texture is impressed in the vinyl. After cooling, the product is either coiled or cut to length.

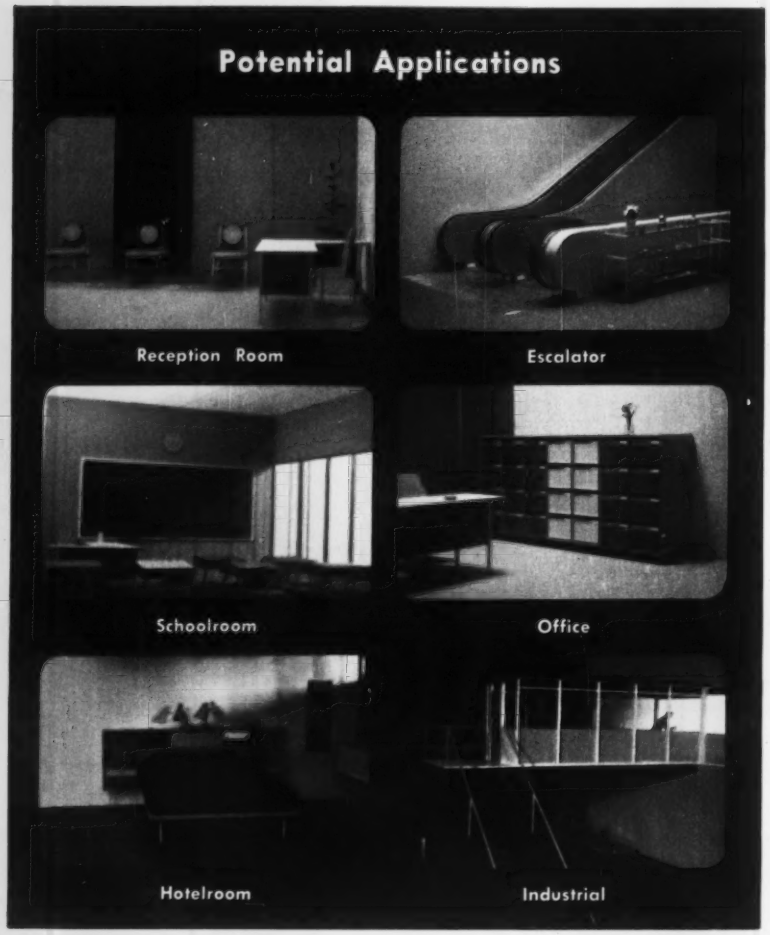
• **Physical Properties**—The coating can withstand considerable exposure to heat without loss of color, texture, or adhesion. It'll take 160° F continuously, 212° F for two days. It softens at 350° F, chars above 400° F. But it won't support combustion. In many cases, protection for the reverse side is unnecessary because the sheet is phosphatized in production. Also available for back protection are hot-dipped zinc, modified epoxy resins, and temporary chemical treatments. Indoor and outdoor tests indicate that underfilm corrosion is not a problem.

RICHARD B. LORD, U. S. Steel's director of product development, shows some brightly colored samples of vinyl coated steel. The cream and blue office walls are vinyl coated, too. The space heater and portable air conditioner show how the material is being used in medium size appliances. The material has two basic advantages over painted steel, says Mr. Lord: "Textured appearance and warmth . . . and remarkable resistance to scuffing, scratching, and abrasion . . ."

These materials won't stain it: Conventional die lubricants, alkaline cleaners, fountain pen ink, alcoholic beverages, detergents, acid cleaners, nail polish, and fruit acids. These stain permanently after long exposure: Iodine, ketone, lipstick, and acetone.

• **How It's Sold**—The product is sold through U. S. Steel's regular distribution channels. You can order it in gages from 18 through 28, widths from 24 to 52 in., and lengths from 30 to 144 in. It's also supplied in coils (up to 8000 lb). The liquid vinyl coatings are 0.008 to 0.030 in. thick. (Thickness may be specified in increments of 0.001 in. within that range.) Hardness is 60 to 90 Shore A durometer. You can order any color you want. Seven standard textures are available, but you can have an exclusive pattern if you prefer. Maximum texture depth is 0.005 to 0.006 in., leaving 4 to 6 mils of base coat.

• **What It Costs**—In most cases, you'll pay 20 to 35 cents a square foot. Prices vary with gage and order size. Examples: About 20 cents a square foot for 0.010 in. of vinyl (single color) on a 28 gage



"To the serious industrial designer, to the product planners of our industry, to progressive architects and industrial management—and American consumers—vinyl coated steel sheet is a real find."

So says Peter Muller-Munk. The Pittsburgh industrial designer was retained by U. S. Steel to explore end uses for the product. Shown above are some of the applications he suggests. "In all the industries we investigated, we discovered that vinyl coated steel was able to accomplish significant product improvement . . . we believe it opens up new avenues for the development of better, more lasting, and more economical products," he reports.

drawing quality sheet in quantities of 20,000 sq ft; about 24 cents for 24 gage; and about 35 cents for 18 gage. In the last example, the price is about two and one-half times that of the steel alone. Sheets made by the corporation's process are generally less expensive than other decorative materials. They may undersell vinyl coated steel sheets produced by lamination—sometimes by as much as 20 per cent. Comments Mr. Estes: "The process economics of our method are consistent with our mill producing philosophy. The cost to consumers generally reflects the 'mill price' concept associated with high volume operations." Since U. S. Steel sells sheets to many of the laminators, it wishes them continued prosperity. They have an advantage: They can offer a wide variety of patterns in multicolored coatings. U. S. Steel produces only solid colors at present.

• **Vinyls vs. Paint**—The most widely used decorative material that's competitive is painted or embossed steel. Here the economic situation is reversed. Vinyl coating usually costs significantly more than painting. "Fabricators aren't likely to substitute our product for painted steel on an economic basis," Mr. Lord admits. "They'll have to need our functions."

In some cases, resistance to scratching alone is sufficiently important to offset vinyl's higher cost. A television manufacturer found that he could make portable TV cabinets as cheaply with vinyl coated sheets as with painted steel. Reason: Painted cabinets were often so badly marred in assembly that they had to be repainted.

• **Size of Market**—How big is the market for vinyl coated sheets, when you consider all metals that can be coated? By one estimate, about 25 million sq ft of vinyl coated metals were sold last year. Assuming an average selling price of 40 cents a square foot, it's a $10 million market. Within a few years, it may be $30 million or $40 million.

• **Needed: Faster Welding** — The big obstacles to tremendous growth are a lack of welding knowhow and suitable equipment. The sheets can be welded on a production basis, but time, energy, and pressure must be controlled to avoid damage to the coating. Since vinyl is an insulator, current flow must be regulated from the back side. Four basic techniques have been applied with success: Graham studwelding, projection welding (capacitor discharge), spring loaded electrode welding, and magnetic force welding. All are too slow for auto and appliance manufacturing. They use self-indexing equipment capable of 50 spotwelds a minute.

• **Impact**—That's the story, but it's really only the beginning. Color and texture have added a new dimension to steel.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

Air Hardening Steel Has High Strength at 1000° F

An air hardening specialty steel that resists softening upon continued exposure to temperatures of 1000° F is expected to find use as a structural material in jet aircraft and allied equipment.

Produced by Latrobe Steel Co., Latrobe, Pa., the steel also provides high toughness and ductility at tensile strength levels up to 300,000 psi. Latrobe calls the material Dynaflex.

Another principal advantage: It can be fully hardened in large section sizes. The high tempering temperature that can be used brings about the nearly complete relief of residual hardening stresses necessary for maximum toughness at high strength.

Other characteristics of the material include ease of forming and working, good weldability, relatively low coefficient of thermal expansion, better than average corrosion and oxidation resistance, and low strategic alloy content.

Dynaflex contains 5 per cent chromium, 1.30 molybdenum, 0.90 silicon, 0.50 vanadium, 0.30 manganese, and 0.40 carbon.

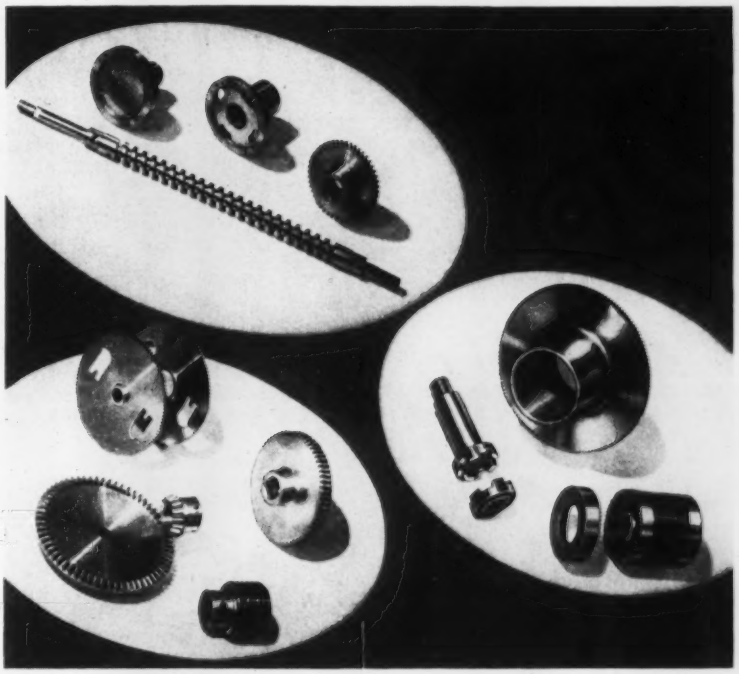
Spray Booth Lining Saves Clean-Up Time

A near-permanent release lining material for paint spray booths that saves clean-up time will pay for itself in five months, says the Fabrics Div. of E. I. du Pont de Nemours & Co., Wilmington, Del.

Tested in huge traveling spray booths by an eastern railroad, it reduced the number of manhours required to peel off accumulated overspray by one-third.

The technique consists of lining booths with Armalon TFE fluorocarbon coated glass fabric. Fairprene 5140 cement is used as the bonding agent.

No stripping lacquer is required with the lining because paint adheres loosely to its surface. Thick layers can be removed easily with the hands periodically over an indefinite period, says Du Pont. Accidental rips and tears can be readily patched.



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No matter how fine your gear requirements — Perkins can solve your problems. Perkins unique custom-gear engineering service, available to your engineering staff prior to the blueprint stage, will . . . eliminate production headaches . . . cut excessive costs. This service — recognized by leaders in the radar, electronic and missile fields, and backed by 52 years of custom gear experience — assures the precision quality needed to guarantee trouble-free operation. Don't gamble with gear performance . . . Perkins skilled personnel, together with modern up-to-date equipment guarantees fast delivery on prototypes or production runs. Call or write Perkins for complete information on custom-gear engineering and a quotation on your requirements. Then judge for yourself.

YOURS ON REQUEST Folder showing custom gears Perkins has made (from various materials) for aircraft, automotive, precision instruments, home appliances, portable and machine tools, and other products. Includes Perkins facilities for producing various gear types and sizes. *Write today.*

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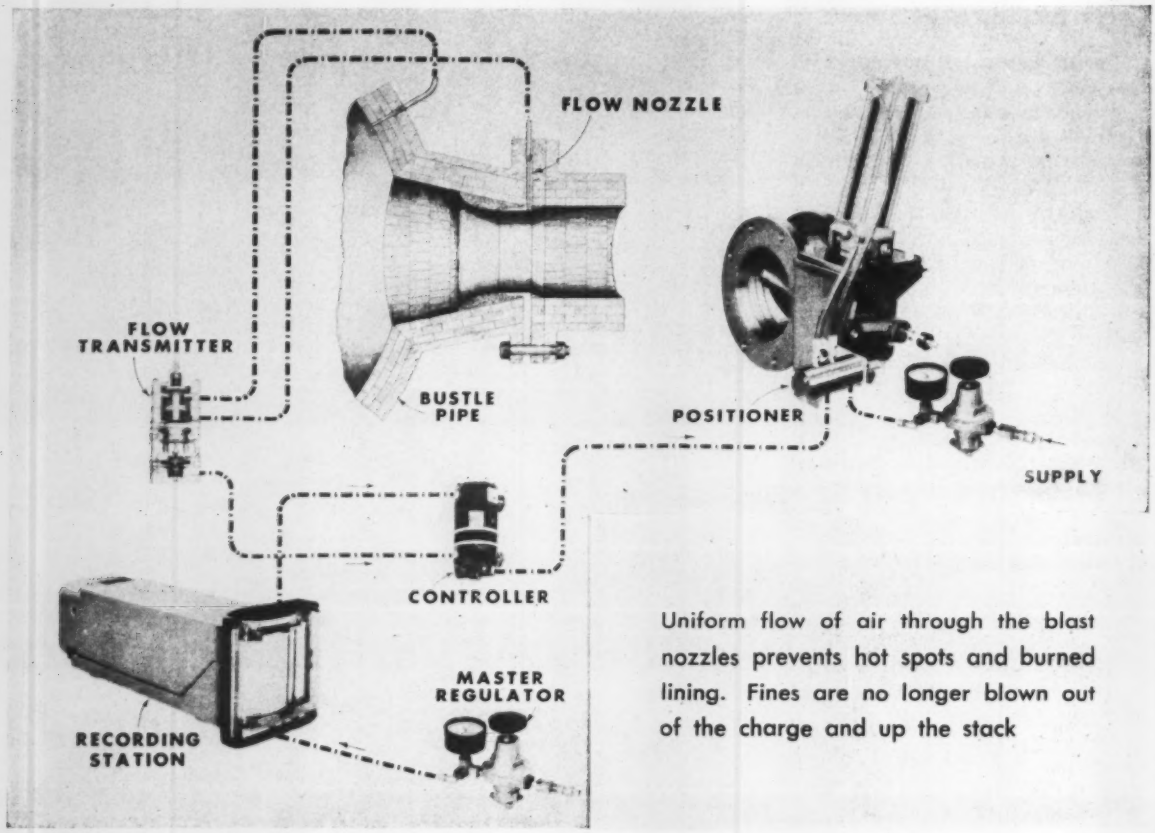


Uniform flow of air through the blast nozzles prevents hot spots and burned lining. Fines are no longer blown out of the charge and up the stack

Automatic Tuyere Control Cuts Blast Furnace Wear

THE RIGHT controls will often reduce operating and maintenance costs and prevent loss of material.

An automatic control system, designed to balance the flow of air through blast furnace tuyeres, reduces blowing costs, prevents burning of furnace lining, and keeps fines in the charge from being blown out the stack. It's available from B-I-F Industries Inc., Providence, R. I.

• **Background** — Without control, flow of air into the blast furnace isn't uniform. Furnace back pressure varies at different points. Where pressure is low, the tuyeres pass more air. Result: Hot spots develop on the walls of the furnace, and greater air velocity causes fines to be blown from furnace charge.

For several years, United States Steel Corp. has experimented with ways of controlling tuyeres. The first system used venturi tubes for measuring pressures, and ceramic lined butterfly valves for throttling.

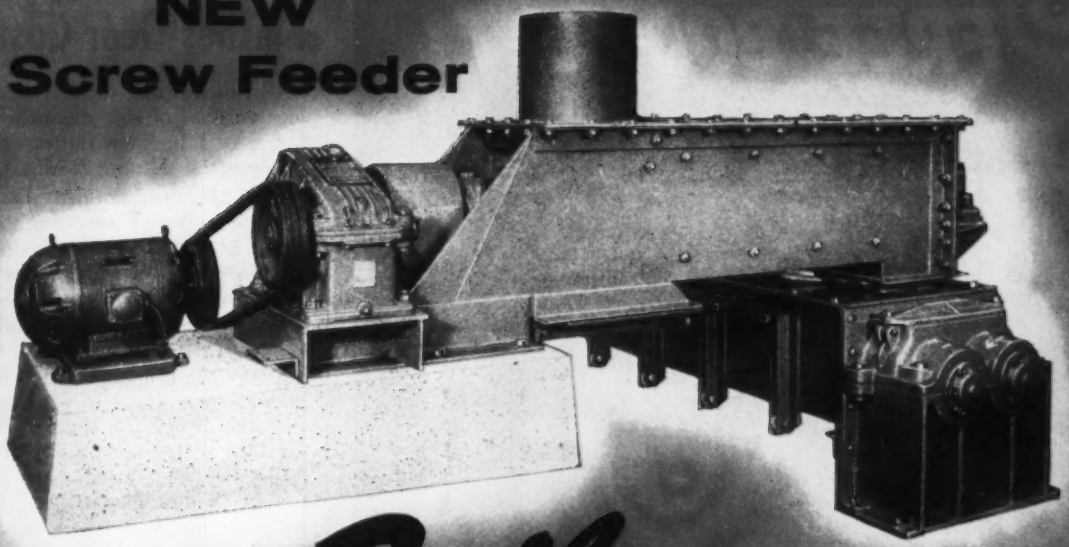
An elbow meter, designed by B-I-F, and first used at the Fairless (Pa.) Works of U. S. Steel, eliminated the need for venturi tubes. An improved nozzle, also designed by B-I-F, was later introduced at the Gary (Ind.) Works of U. S. Steel. A control circuit for each tuyere and a co-ordinating circuit complete the system.

• **How They Work**—Each tuyere is equipped with a flow nozzle, a balanced flow transmitter, a controller, a strip chart recorder, a four-way valve positioner, and a ceramic lined butterfly valve. If less than normal furnace back pressure causes a tuyere to pass more air than it should, the butterfly valve is throttled, reducing the flow of air.

If one of the tuyeres is plugged, the controller opens the butterfly valve, permitting more air to enter. If the tuyere can't deliver its share of air when the valve is wide open, more air is directed to the others. When they throttle back to prevent excess flow of air, bustle pipe pressure is increased, and obstructions are blown out.

A high pressure alarm circuit prevents bustle pipe pressure from exceeding a set limit. If the nozzle cannot be cleared with blasts of air below that pressure, it is switched out of the system.

NEW Screw Feeder



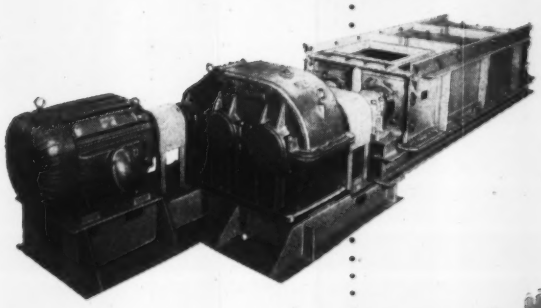
MAKES **Bailey** PUG MILLS

EVEN MORE EFFECTIVE IN SINTERING PLANT AND BLAST FURNACE DUST CATCHER SERVICE

The new Bailey Screw Feeder is effective for flow regulation and conveying of flue dust, ore fines and various other materials. An outstanding feature is that it maintains uniform flow, even when irregular feeding may be caused by "hanging" of material in dust catcher or a sudden furnace "slip." The feeder speeds the sintering process and assures substantial savings through reduced handling costs.

BAILEY PUG MILLS were developed for low-cost processing of greater tonnages of more uniform sintered products. They are built for continuous service, in capacities from 100 to 400 tons per hour.

Write for Bulletins



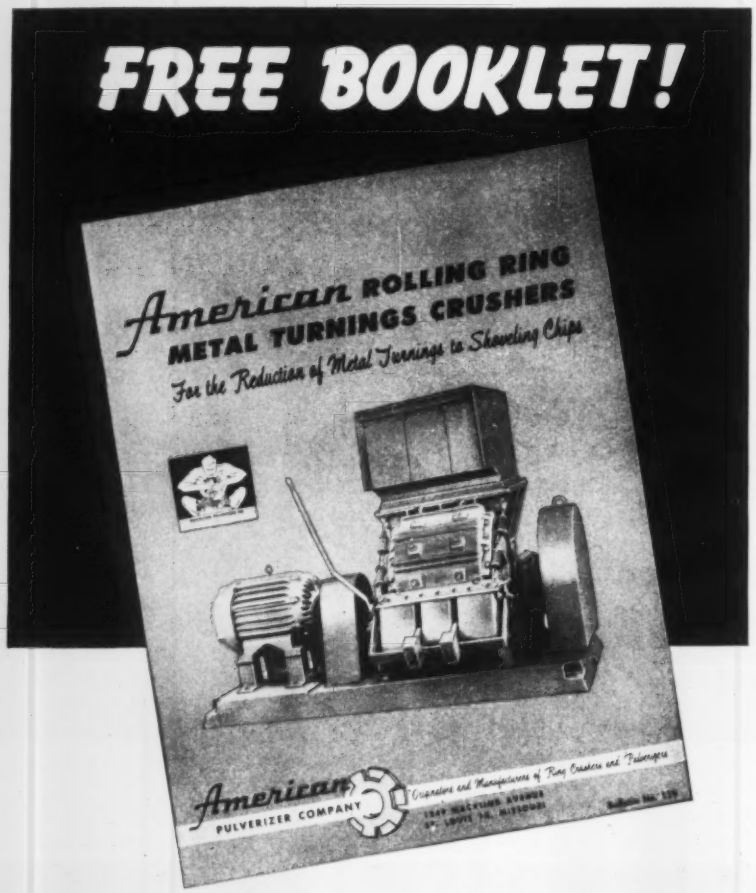
This Bailey Double Shaft Pug Mill is equipped with a double helical gear reduction unit. Types of Bailey Pug Mills available include single and double shaft types, with direct or rope drives.

WILLIAM M. **Bailey** COMPANY

ENGINEERS

LEADERSHIP THROUGH QUALITY

1221 BANKSVILLE ROAD — PITTSBURGH 16, PA



How you can turn METAL TURNINGS into additional PROFIT

If your plant has 20 tons or more metal turnings per month, this booklet will tell you how you can make a substantial yearly profit.

Metal turnings reduced to shoveling chips in an American Metal Turnings Crusher command $2 to $4 more per ton on the scrap market. In addition, you save 75% of storage space and recover 30-50 gallons more cutting oil per ton of turnings.

This booklet shows all models of American Metal Turnings Crushers with capacities from 2 to 50 TPH as well as installations showing conveyor systems, crushers and chip wringers.

Write today for Bulletin 159. It will pay you to have an American Metal Turnings Crusher in your plant.

American PULVERIZER COMPANY
ORIGINATORS AND MANUFACTURERS OF RING CRUSHERS AND PULVERIZERS
1539 MACKLIND AVE. ST. LOUIS 10, MO.

Zinc Diecasting Slashes Gear Cost

ARE you realizing the full cost cutting potential of zinc diecastings? If not, take a tip from the experience of Minnesota Mining & Mfg. Co.

The 3M firm decided that the forming method it was using to produce identical mating, variable pitch gears for its copying machines was proving too costly.

Seeking a solution, 3M engineers consulted with Twin City Die Casting Co., Minneapolis. They found that the gears could be produced as zinc diecastings at a fraction of the previous cost and that machining could be eliminated. An added benefit: Uniformity of tooth shape, radiuses, and angles from piece to piece.

Now, gears can be so precisely duplicated that any two can be relied upon to mesh perfectly without danger of misalignment.

Each of the mating gears works from a fixed center. Each contains 23 teeth, each differently shaped. Pitch radiuses range from 0.240 to 0.840 in., the teeth are undercut, and none converges to a common center.

Because there can be no adjustment of shaft centers, tolerance requirements for the teeth must be within ±0.001.

Firm Makes Epoxy Mirrors

Precision optical mirrors made of epoxy resins are a major scientific advance, says Military Products Div., Singer Mfg. Co., New York.

An epoxy master negative is cast from a precision glass master. High quality duplicates are cast from the negative and coated with aluminum in a vacuum. The product, called Repli-Kote, faithfully duplicates complex curves. Physical properties are superior to those of glass —shocks as high as 22,000 Gs don't affect their accuracy.

Other advantages include: Faster production; integral mounting devices; infrared and electrical components can be molded into the plastic; corrosion resistance equal to glass counterparts.

If you're interested

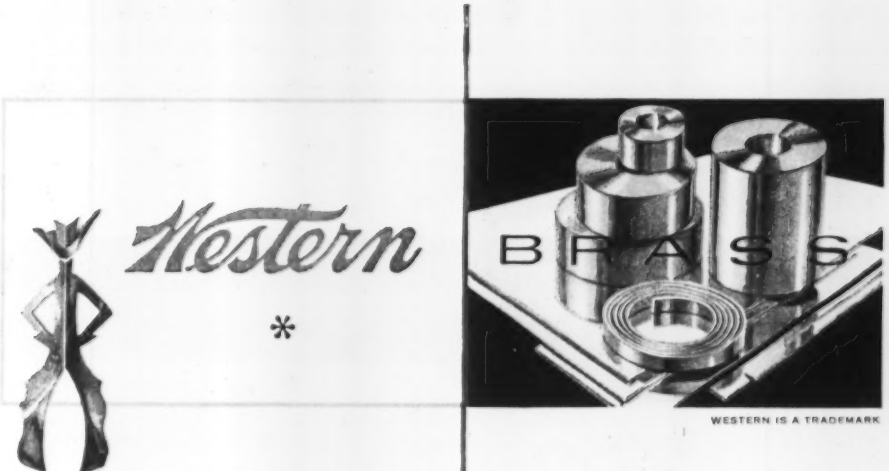
in a *modern metal*

you should research *brass*...

especially Western Brass...

it's "*tailor-made*"

for each job!



WESTERN IS A TRADEMARK

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Automatically

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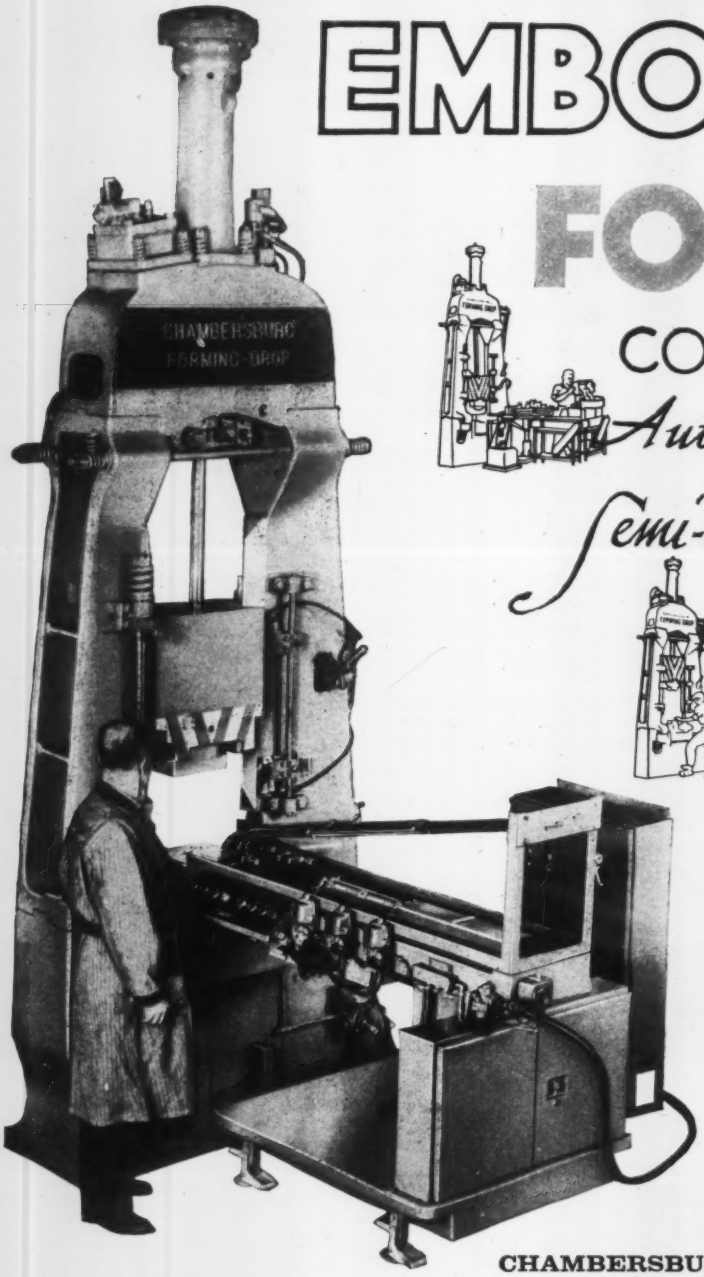


The new Chambersburg Forming Drop meets the demand for an accurate, high production hammer for coining, embossing, forming and cold striking. The impact blow, which minimizes springback, can be precisely adjusted to suit particular job requirements. Electric controls permit the use of versatile feed devices increasing operator safety and efficiency.

A Chambersburg representative will be glad to show you a film depicting this new production method. Phone or write for further details.

CHAMBERSBURG ENGINEERING COMPANY
CHAMBERSBURG, PA.

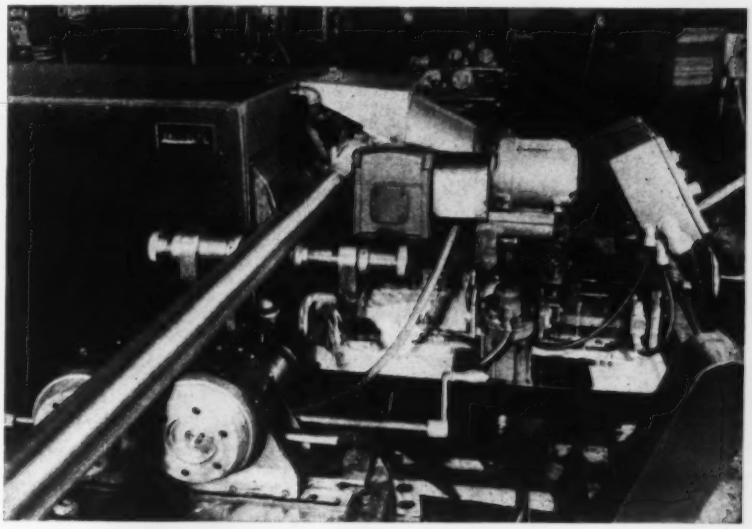
CHAMBERSBURG
FORMING DROP

Centerless Belt Grinder Handles 9 in. Stock

CENTERLESS belt grinding of rods and tubes from 1 to 9 in. in diameter and any length is now possible.

The new Engleberg Model 8132-HD machine permits heavy, single pass stock removal (up to 3 lb a minute), quality finishes, and close tolerances on ferrous and nonferous metals. Average feed-through rates vary from 2½ to 20 fpm.

The machine has an outboard support mechanism with powered stands. The stands and the regulating wheel (it determines the speed and direction of the rotating stock) are driven by an adjustable frequency, alternating current power unit.



Stock is loaded on the outboard supports and fed into the abrasive belt by the stands working in conjunction with the regulating wheel. When the tube or rod has been ground along its entire length, it trips a microswitch which reverses the angle of the regulating wheel and support wheels, and the stock feeds back past the belt grinding head.

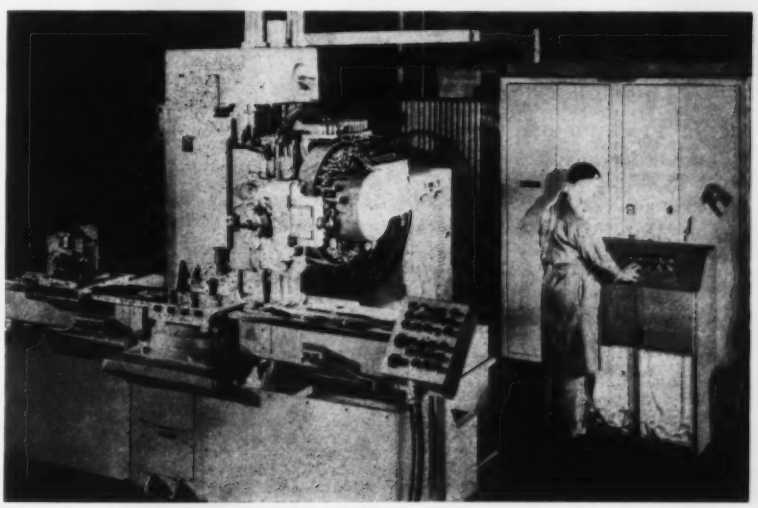
The grinder also has a power infeed control that is synchronized with the feed stands to provide correct alignment and proper work height when changing from one diameter tube to another.

For more information, *write* Engleberg Inc., 831 W. Fayette St., Syracuse 4, N. Y.

Combination Machine Changes Tools Automatically

TAPE CONTROLLED milling, drilling, and boring are within the economic reach of the small-lot manufacturer. By reducing setup time, production time, labor costs, and inventory, the KTNC Milwaukee-Matic can pay for itself in one to three years, says its builder.

As many as 31 different tools can be loaded into the machine. One tool is loaded into the spindle, the others into a revolving storage drum. To make tool changes, a transfer arm pivots out from its position beside the drum, simultaneously removes the tool from the spindle and one from the drum, rotates, and simultaneously inserts the new tool in the spindle and the other in the drum. Less than 9



interchangeable with all standard JIC cylinders

With the introduction of the ALL NEW T-J Squair Head, Tomkins-Johnson now offers industry the most complete design range of air and hydraulic cylinders. Presently available in bore diameters from 1-½ to 8 inches, the T-J Squair Head is an interchangeable cylinder which produces maximum force and efficiency, with minimum pressures . . . and is also adaptable to the use of low pressure oil as the working medium. Write today to The Tomkins-Johnson Co., Jackson, Michigan, for Bulletin #SQ 10-58 and complete details.

CHECK THESE 10 POINTS OF T-J SUPERIORITY

1. One Piece Piston
2. Hard Chrome Cylinder Bore and Piston Rods
3. High Tensile Steel Tie-Rods
4. Cushion Adjusting Screw, Externally Adjustable
5. New Super-Cushion for air, or Self-Aligning Master Seal for oil (T-J Patents)
6. Solid Steel Heads and Mounting Plates Standard all Models
7. Port Design Allows Minimum Pressure Drop on Inlet or Outlet
8. Chevron Type, Self-Adjusting Rod Packing
9. Piloted Packing Gland—Absolute Alignment
10. Piston Rod, Extra Strong—Polished and Chrome Plated for Efficiency and Protection

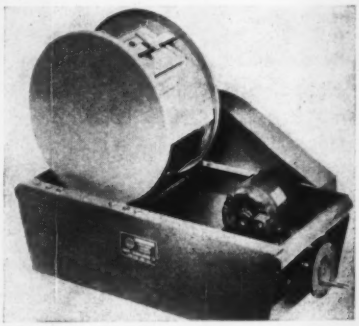
T-J TOMKINS-JOHNSON
RIVITORS . . AIR AND HYDRAULIC CYLINDERS . . CUTTERS . . CLINCHORS

seconds are required for changes.

A General Electric numerical control system directs worktable and spindle positioning, controls tool changes, speed, and feed. For more information, *write* Kearney & Trecker Corp., 6800 W. National Ave., Milwaukee 14, Wis.

Portable Tumbler Has Variable Speed Drive

PRECISION and portability for small parts finishing, deburring, and polishing are obtainable with the Model RA Rollabrader. The 0.5 cu ft machine has a variable speed barrel drive system adjustable from 20 to 46 rpm.



Other features include a vinyl barrel lining, convenient lifting handles on both barrel and machine bed, and welded construction suitable for steel ball burnishing.

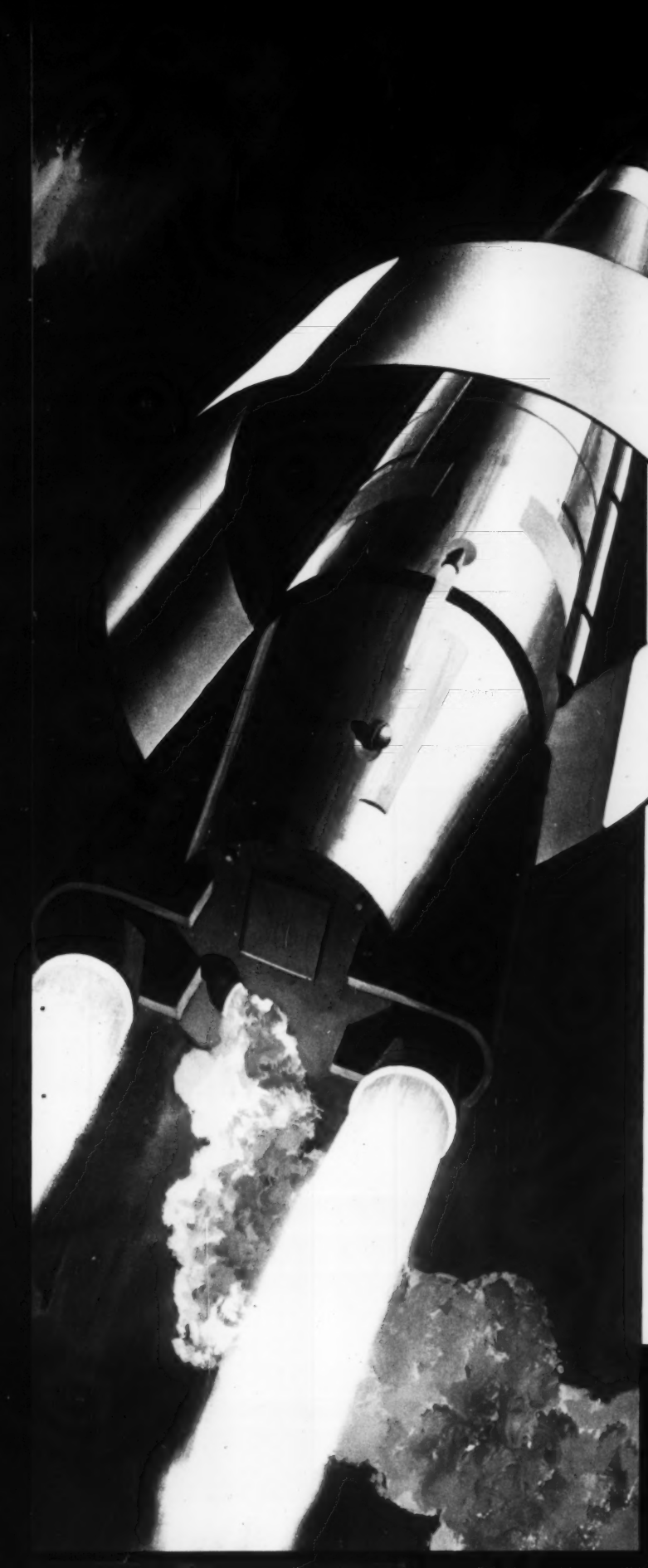
For more information, *write* Rampe Mfg. Co., 14915 Woodworth Ave., Cleveland 10, Ohio.

Multispindle Drill Head Has Snap-In Universals

THIS multiple spindle drill head converts any single-spindle drilling machine for profitable single pass, multiple hole work. It can be used for drilling, tapping, reaming, countersinking, and counterboring in a circle, straight line, or random pattern.

The universal joints which drive the spindle snap into place without tools. This arrangement cuts the time required for relocating spindles in different patterns.

The gear and bearing design al-



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Space metals—specified for vital areas of our rockets, missiles, and superspeed aircraft. Here is where exactness in manufacture counts for most—where know-how such as SUPERIOR's assures the utmost precision in strip steel grade, gauge, temper and finish. ● Whether your needs are up in the air or right down to earth, SUPERIOR can serve you dependably. Check with us!

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JONES & LAMSON "AUTOMATION"

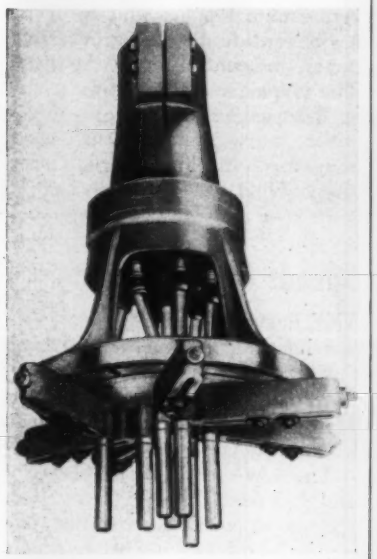
the man who needs a new machine tool is already paying for it

Numerical Control . . . what's it worth?

What *about* numerical control: is it all it's cracked up to be? The answer, in a word, is "yes". Here's why. With numerical control, the *big* factor is *flexibility*. Tape or numerical programming can be employed economically for medium or small lot production, even down to *single pieces*. Accuracy is also increased. For instance, Jones and Lamson tape controlled positioning units hold tolerances of ±.001 on applications for punching, drilling, boring or similar operations where point-to-point positioning is mandatory. Machine set-up and change-over become primarily an office procedure. Numerical control of machining operations eliminates the need for cams, templates, even prototype parts and special fixtures. It results in greater machine utilization, and speeds actual machining. Lead time is reduced, and because human error is largely eliminated, accuracy is improved.

Any way you look at it, numerical control has come of age. It's being used more and more, simply because it produces better, at lower costs. For detailed information, write Jones & Lamson Machine Company, Dept. 710, 517 Clinton Street, Springfield, Vermont.

Turret Lathes • Automatic Lathes • Tape Controlled Machines • Thread & Form Grinders • Optical Comparators • Thread Tools



lows the drill head to be mounted in any position. With a 1:1 gear ratio furnished as standard, all drill head spindles operate at the same speed as the machine spindle. Other gear ratios are available.

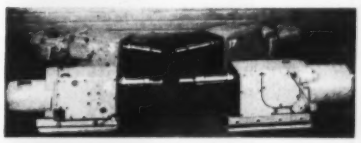
For more information, *write* Industrial Sales Div., Cleveland Pneumatic Industries Inc., 64 Old Orchard Rd., Skokie, Ill.

Drilling Units Have Long Strokes, Cam Feeds

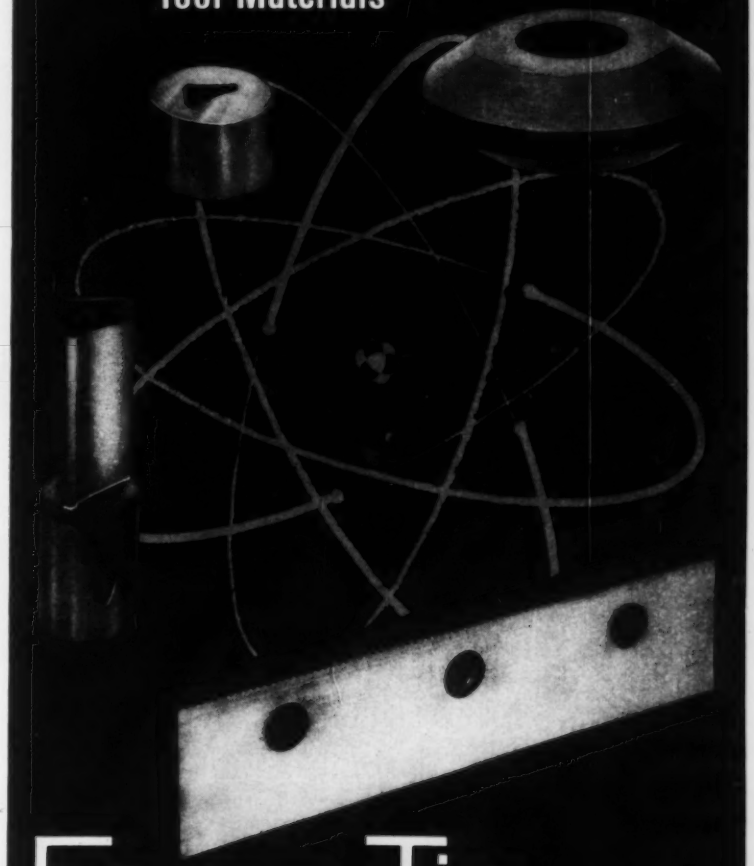
QUILLS are fully extended in the photo of these automatic units to show the stroke length—4 in. on the Model 4 and 5 units, 5 in. on the Model 16 and 17 units. Models 4 and 16 are drilling units, Models 5 and 17 are companion tapping units.

Each unit has a cam feed for accurate repetition of the work cycle. Follower segments make the stroke of the spindle double that of the feed cam. Different speeds, feeds, and strokes are available b changing speed and feed gears and the feed cam.

Each drilling unit may be con-



A completely new concept in Tool Materials



Ferro-Tic (with proven performance)

the only machinable carbide in existence!

FOR: Blanking, Laminating, Deep Drawing and Heading Dies, Arbors, Core Rods, Wear Parts, etc.

FERRO-TIC combines the fabricating advantages of steel with the wear-resistance of carbide. In the annealed, completely dense state, FERRO-TIC can be machined with high-speed steel tools on conventional tool room equipment; thus, the need for costly diamond grinding is eliminated. Once hardened, by oil quenching from 1750°F, FERRO-TIC is extremely hard and wear-resistant. FERRO-TIC stock blanks can be fabricated into long-wearing carbide components, using available tools and skills without delay!

FERRO-TIC can be
- TURNED
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- MILLED
- SAWED
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Write or telephone for complete information:

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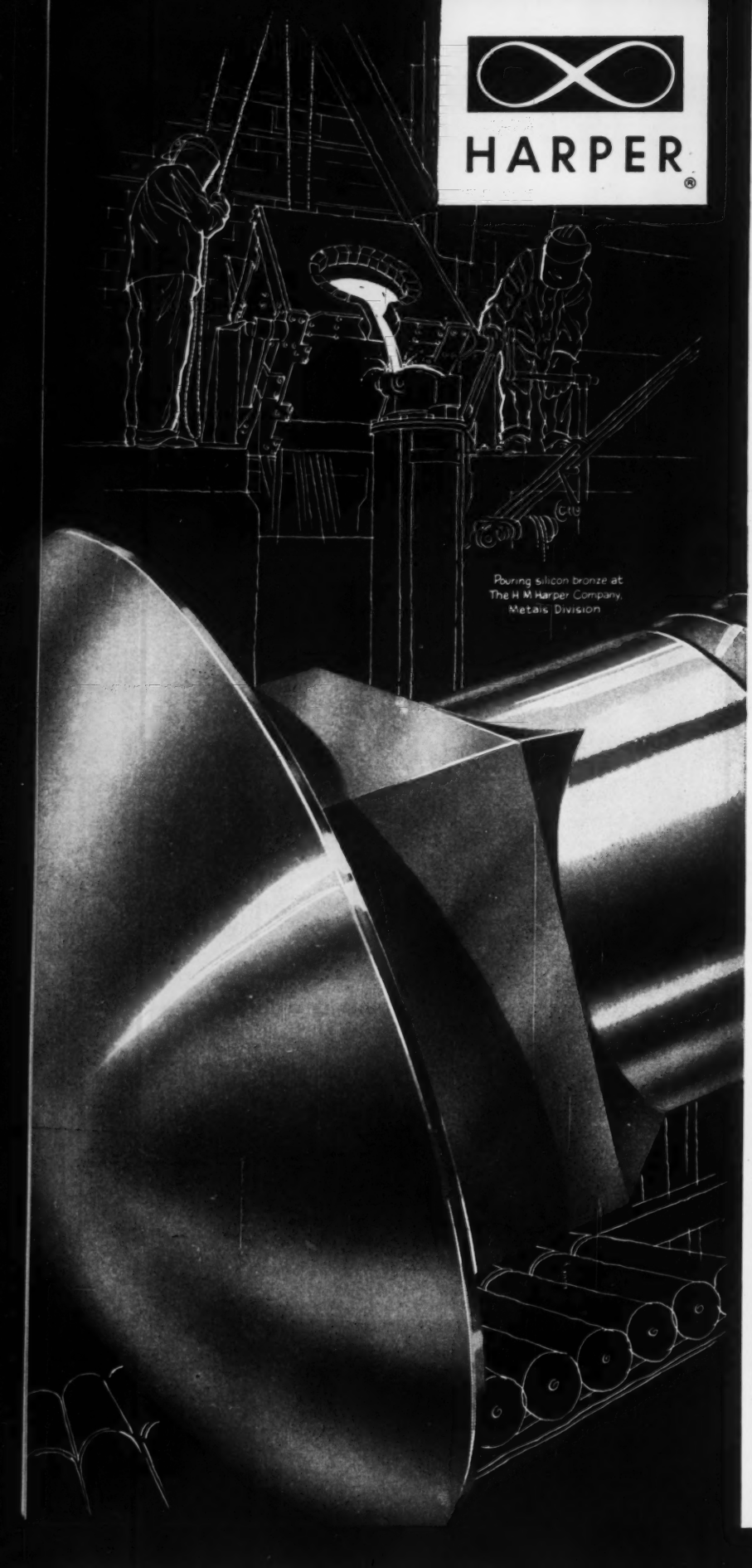


verted to a tapping unit by using a different feed cam, a reversing motor, and controls to reverse them. The tapping units have time cycles as short as 3 seconds.

For more information, *write* Kingsbury Machine Tool Corp., Keene, N. H.

Speeds Floor Cleaning

THE Floormobile cleans factory and warehouse floors without raising dust. It does the job by suction seven times faster than pushbroom cleaning and works equally well in open floor or congested areas.

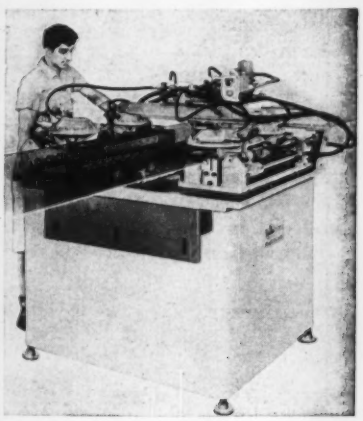
The new models, Series G-59M-1 and E-59M-1, have a 50 per cent increase in power, more suction, and a new, larger filter bag arrangement. The new filter lasts longer and it can be cleaned without removing from the machine.

The Litterdoor Nozzle, which opens so that bulky trash can be sucked up as easily as dust and dirt, is standard on both models. For more information, *write* Handling Devices Co., 34 Concord Lane, Cambridge 38, Mass.

Double Air Feed Handles Wide Stock in Presses

MATERIALS up to 60 in. wide can be fed into presses or shears with the Ses-Matic Double Air Feed. It can feed from any side of a press, and is easily moved from press to press or shear to shear.

In operation, the stock is gripped



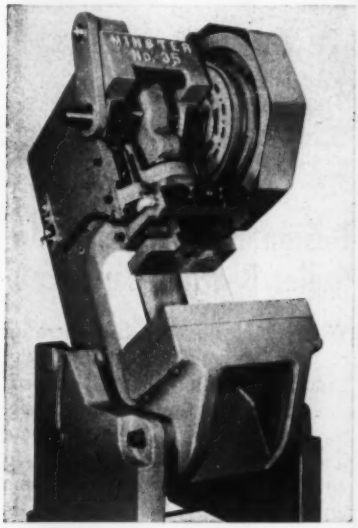
along both edges of its width and carried forward by two gripper heads, each sliding on guide bars. The stroke length is infinitely adjustable to the maximum of the unit. Metal-to-metal stops insure exact duplication of stroke length.

The stroke is cushioned at each end by a self-contained hydraulic check. No adjustment is necessary for changing from one stock thickness to another.

Available as optional equipment with the air feeds are nonpowered stock levelers for removing coil curvature from mild steel. For more information, *write* Special Engineering Service Inc., 8161 Livernois Ave., Detroit 4, Mich.

Line of OBI Presses Has Large Die Area

IMPROVEMENTS on these 35, 45, and 60 ton capacity presses include a modified flanged slide which gives larger die area, a lower connection ball box adjustment which allows

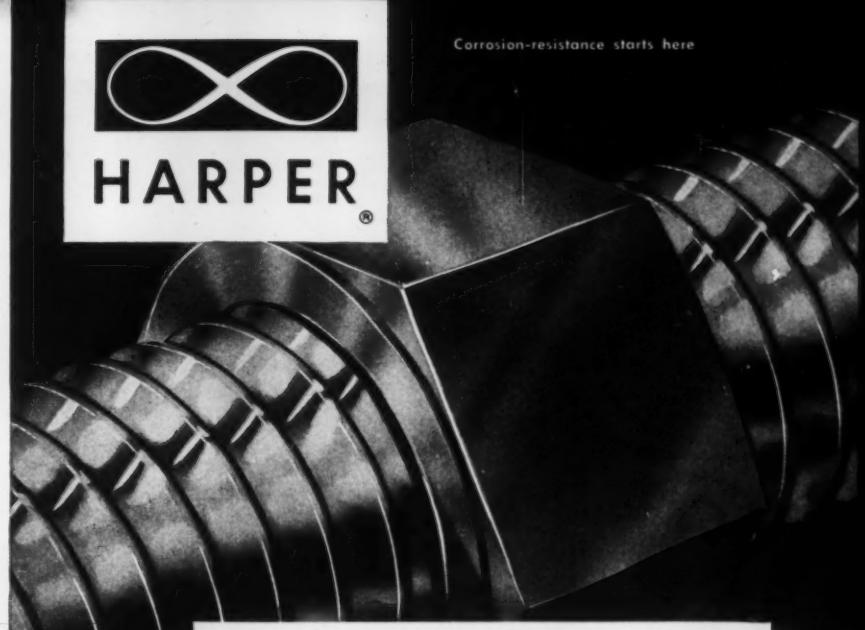


quick takeup of ball box clearance without dismantling the slide, and an optional recirculating lubrication system.

The recirculating system continuously lubricates main and connection bearings, gibs, gears, and counterbalances. Enclosed within the press frame and protected from damage, it lowers maintenance and

HARPER®

Corrosion-resistance starts here



What CORROSION-RESISTANT Fastenings Do You Need?

Harper has manufactured fastenings in more than 100 different corrosion-resistant alloys . . . Stainless Steels, Monel, Silicon Bronze, Naval Bronze, Brass, Aluminum, Titanium.

What STANDARD Type and Size Do You Need?

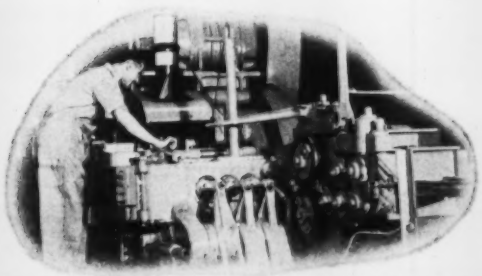
From #2 screw size through diameters of 2 inches, Harper maintains the broadest standard product line in its industry . . . and Harper Distributors are everywhere. See your Yellow Pages.

What SPECIAL Type Fastenings Do You Need?

Cold Heading and Hot Heading techniques are a science at Harper. Both "know-how" and facilities are directed toward cost-reduction and quality improvement on your parts of non-standard size and shape.

What EXTRA Benefits Does Harper Give YOU?

- You have assured supply because Harper produces its own raw metal.
- You receive immediate deliveries from local stocks.
- You gain customer goodwill for your products through Harper quality.
- You lower your costs by efficiencies in purchasing, maintenance and assembly.



Operator observes .734" wire being headed into finished bolts

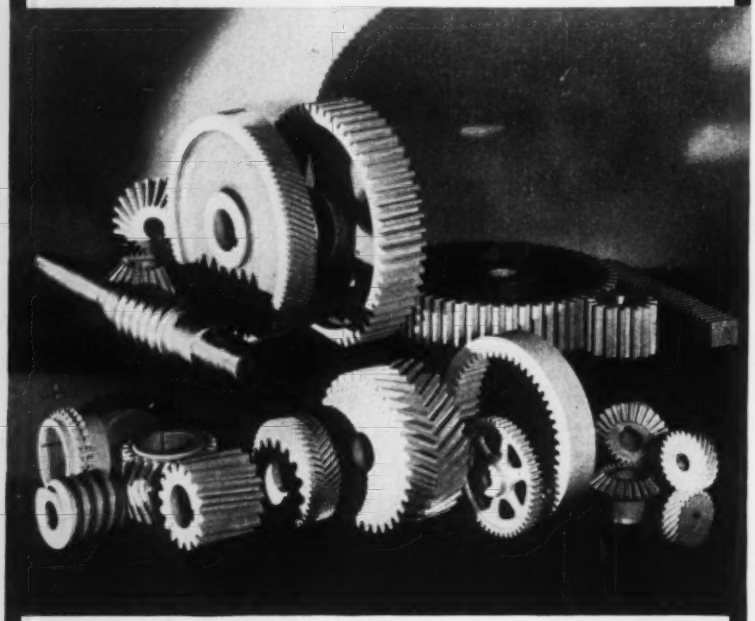
THE H. M. HARPER COMPANY

8200 LEHIGH AVENUE • MORTON GROVE, ILLINOIS

One of these 9

H&S Gears

is sure to answer your power transmission needs!



Spur • Racks • Bevel • Mitre • Internal • Worm • Helical • Spiral • Herringbone

Regardless of type, every H & S Gear is of the rugged, "husky" type. Heavy rims are well reinforced. Hubs are heavy in section, eliminating the need for key patches. All sharp corners are broken and generous fillets are provided.

H & S Gears are available of Steel, Hardened Steel, Alloys, Cast Iron, Bronze, Rawhide, Fibroil, or Bakelite.

Exacting care is exercised in every manufacturing step of H & S Gears. This insures *quietness of operation, uniform velocity ratio,* and *freedom from vibration.*

Whether you need a gear that weighs one ounce or 10 tons, why not put our years of gear engineering experience to work for you. Just send us the specifications or call. There's no obligation.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 Hamilton Avenue

Cleveland 14, Ohio

Write on Company Letterhead for H&S Gear Catalog No. 57

cleanup costs, and prolongs press life.

The presses have a combination air friction clutch and a brake unit which provides torque overload control with controlled cycling and inching.

For more information, *write* Minster Machine Co., Minster, Ohio.

Power Drive Casters Solve Handling Problems

THE Electromite powered caster unit provides a solution for handling loads in the 1000 to 1600 lb class that usually are considered too light to be moved by expensive heavy duty equipment, but are too heavy to be moved by hand.

The caster can be installed on stock trucks, hydraulic lifters, hand trucks, or other loading equipment. Wheel sizes of 8, 10, and 12 in. make it easily adaptable.

It is designed to replace one or both rigid casters on a vehicle. Speeds in forward or reverse up to 10 mph are possible. The casters will accommodate up to 1600 lb. They are powered by a quickly rechargeable battery.

For more information, *write* Swartzbaugh Mfg. Co., Murfreesboro, Tenn.

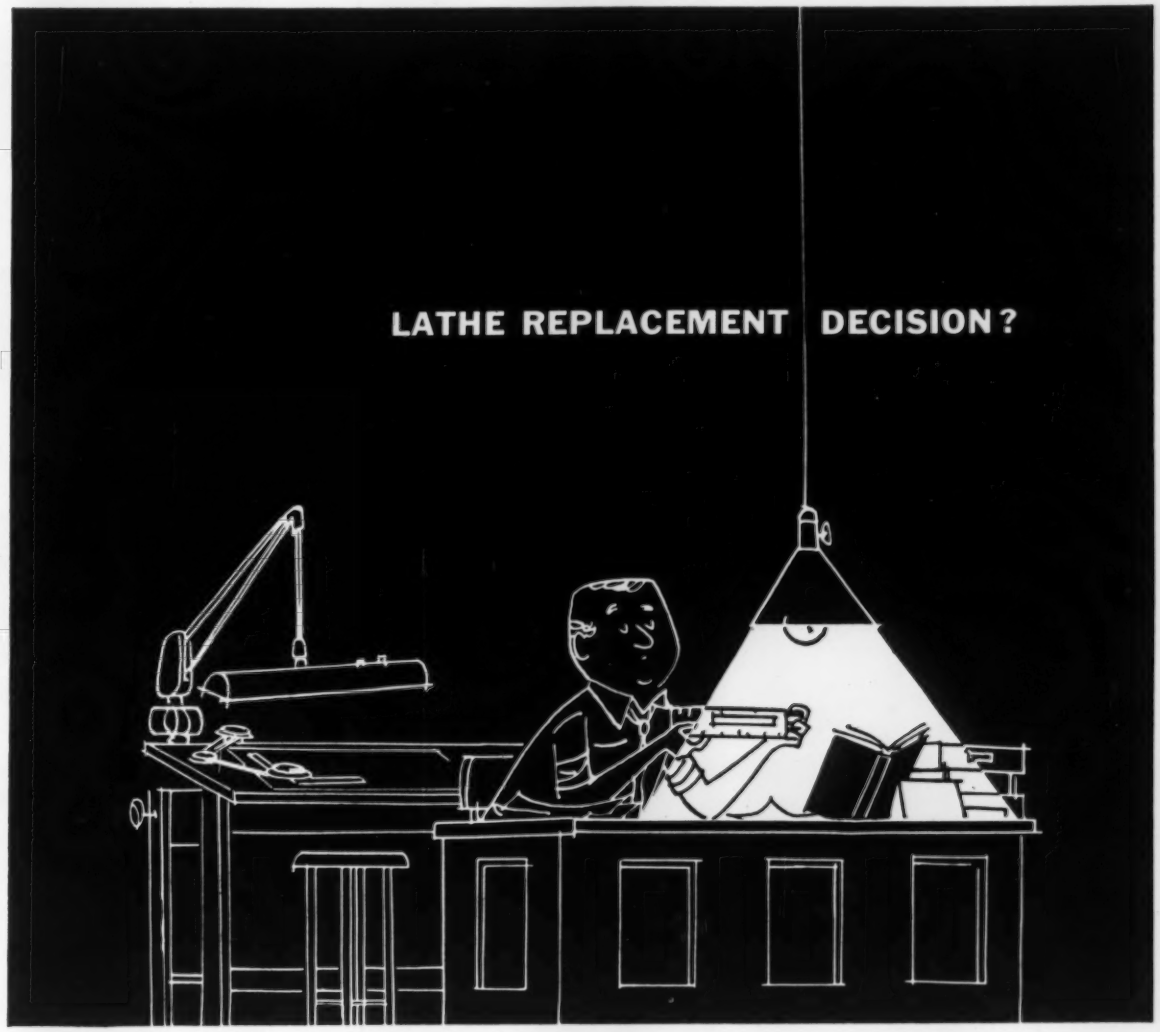
Design Improvements Up Roller Bearing Capacity

YOU CAN upgrade the operation of your equipment with these high capacity roller bearings.

They have three major design improvements: Maximum diameter and quantity of convex rollers for each bearing size; precision machined, centrifugally cast bronze retainers; and high, heavy inner race shoulders.

They are available in bore sizes ranging from 1.5748 to 11.0236 in. with dynamic load ratings up to 288,000 lb. They will also be made in pillow blocks in bore sizes of 1 7/16 to 10 in.

For more information, *write* Link-Belt Co., Prudential Plaza, Chicago 1, Ill.



make it logical . . . . easier, too!

LOOK AT LODGE & SHIPLEY POWERTURN

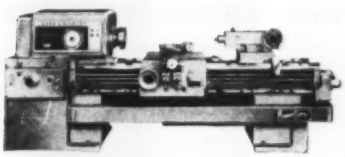
In turning . . . as in every manufacturing operation . . . there are "economic facts of life." Industry constantly demands more and better production at lower cost. This need has been filled by POWERTURN Lathes – demonstrated by case histories (available on letterhead request), which reveal thousands of dollars in cost reduction and higher output.

Base *your* replacement decision on a comparison of *any equipment* with the economic advantages assured by a really new Lodge & Shipley Lathe. POWERTURN facts will help you make a logical decision.

See details in Sweet's Machine Tool File, contact local representative through Yellow Pages or write direct for Bulletin L-104.

The Lodge & Shipley Co., 3070 Colerain Ave., Cincinnati 25, O.

Lodge & Shipley POWERTURN . . . faster, more accurate and specifically designed for newest cutting techniques and toughest alloys.



Lodge & Shipley ... your LODGE-ical choice

Color micrograph of heat tinted section of ferritic Malleable iron showing random dispersion of temper carbon nodules in ferrite. 625X magnification.

Usability is Malleable

In the growing world of metals, certain requirements remain basic: strength . . . versatility . . . economy. Malleable iron castings uniquely answer all three. Malleable castings provide more strength per dollar than any other metal . . . are the most machinable of all ferrous metals of similar hardness.

From the great range of Malleable irons now produced in modern Malleable foundries, you can select exactly the right metal to fill your most demanding needs for endurance, resistance to impact and wear, ductility and constant uniformity. No other metal offers you so much at so low a cost.

For information or service, call on one of the progressive firms that identify themselves with this symbol—

MEMBER
MALLEABLE
CASTINGS COUNCIL

If you wish, you may inquire direct to the Malleable Castings Council, 1800 Union Commerce Building, Cleveland 14, Ohio, for information.

These companies are members of the

MALLEABLE CASTINGS COUNCIL

CONNECTICUT
Connecticut Mall. Castings Co., New Haven 6
Eastern Malleable Iron Co., Naugatuck
New Haven Malleable Iron Co., New Haven 4

DELAWARE
Eastern Malleable Iron Co., Wilmington 99

ILLINOIS
Central Fdry. Div., Gen. Motors, Danville
Chicago Malleable Castings Co., Chicago 43
Moline Malleable Iron Co., St. Charles
National Mall. and Steel Castings Co., Cicero 50
Peoria Malleable Castings Co., Peoria 1
Wagner Castings Company, Decatur

INDIANA
Link-Belt Company, Indianapolis 6
Muncie Malleable Foundry Co., Muncie
Terre Haute Mall. & Mfg. Corp., Terre Haute

MASSACHUSETTS
Belcher Malleable Iron Co., Easton

MICHIGAN
Albion Malleable Iron Co., Albion
Auto Specialties Mfg. Co., Saint Joseph
Cadillac Malleable Iron Co., Cadillac
Central Fdry. Div., Gen. Motors, Saginaw

MINNESOTA
Northern Malleable Iron Co., St. Paul 6

NEW HAMPSHIRE
Laconia Malleable Iron Co., Laconia

NEW JERSEY
Meeker Foundry Company, Newark 4

NEW YORK
Acme Steel & Mall. Iron Works, Buffalo 7
Frazer & Jones Company Division Eastern Malleable Iron Co., Solvay
Oriskany Malleable Iron Co., Inc., Oriskany
Westmoreland Mall. Iron Co., Westmoreland

OHIO
American Malleable Castings Co., Marion
Canton Malleable Iron Co., Canton 5
Central Fdry. Div., Gen. Motors, Defiance
Dayton Mall. Iron Co., Ironton Div., Ironton
Dayton Mall. Iron Co., Ohio Mall. Div., Columbus 16
Maumee Malleable Castings Co., Toledo 5
National Mall. and Steel Castings Co., Cleveland 6

PENNSYLVANIA
Buck Iron Company, Inc., Philadelphia 22
Erie Malleable Iron Co., Erie
Lancaster Malleable Castings Co., Lancaster
Lehigh Foundries Company, Easton
Meadville Malleable Iron Co., Meadville
Pennsylvania Malleable Iron Corp., Lancaster

TEXAS
Texas Foundries, Inc., Lufkin

WEST VIRGINIA
West Virginia Mall. Iron Co., Point Pleasant

WISCONSIN
Badger Malleable & Mfg. Co., S. Milwaukee
Belle City Malleable Iron Co., Racine
Chain Belt Company, Milwaukee 1
Federal Malleable Company, West Allis 14
Kirsh Foundry Inc., Beaver Dam
Lakeside Malleable Castings Co., Racine
Milwaukee Malleable & Grey Iron Works, Milwaukee 46

How to Select the Best Metal to Perform a Given Set of Functions

Any equipment part can be described, at least approximately, in terms of the functions it must perform. That is, it must provide a certain strength plus resistance to wear, fatigue, impact or corrosion. The finished part must provide the best combination of all necessary factors at the lowest possible cost — a cost that must include machining, finishing and assembly where applicable.

Unique Production Method Combines Desirable Characteristics

The amount and form of carbon in ferrous metals is of prime importance. The carbon content of Malleable iron (2.00 to 2.60%) provides good fluidity at the pouring stage. Yet neither flake graphite nor combined carbon is present in finished standard Malleable iron.

As the photomicrograph of standard Malleable iron shows, the carbon has been transformed into temper carbon nodules in a matrix of ferrite during the heat-treatment given *all* Malleable iron castings. The result is a metal with a unique combination of high strength, toughness and machinability.

Pearlitic Malleable irons differ from standard, or ferritic, Malleable only in that a controlled amount of the carbon is combined with the iron to form a pearlitic matrix around the temper carbon nodules. This increases strength, hardness, wear resistance and modulus of elasticity, while retaining good ductility and machinability.

TENSILE PROPERTIES — A.S.T.M. MINIMUM SPECIFICATIONS

Standard and Pearlitic Malleable Irons				
Designation	Tensile Strength p. s. i.	Yield Strength p. s. i.	Elongation % in 2 in.	Ratio of Tensile to Yield %
Standard				
35018	53,000	35,000	18	66
32510	50,000	32,500	10	65
Pearlitic				
45010	65,000	45,000	10	69
45007	68,000	45,000	7	66
48004	70,000	48,000	4	69
50007	75,000	50,000	7	67
53004	80,000	53,000	4	66
60003	80,000	60,000	3	75
80002	100,000	80,000	2	80

Strengths up to 135,000 p.s.i. tensile and 110,000 p.s.i. yield are produced commercially under individual producers' specifications.

TYPICAL BRINELL HARDNESS NO RANGES

Pearlitic Malleable Irons							
Designation	45010	45007	48004	50007	53004	60003	80002
B. H. N.	163-207	163-217	163-228	179-228	197-241	197-255	241-269

New Savings Result

From the wide range of properties obtainable, a Malleable iron may be selected that will most completely meet ideal design and functional requirements. Because of the great latitude of producible sizes, from a fraction of an ounce to hundreds of pounds, Malleable can be used for a wealth of applications.

Malleable iron's economy is derived in two ways. First, the casting process is generally accepted as the most economical method of producing a finished part. Secondly, being the most machinable of all ferrous metals of similar hardness, cast or otherwise, Malleable iron castings provide exceptional economies in time, tool and power consumption.

Today's Malleable iron castings offer tremendous strength, uniformity, versatility and economy. The producers of Malleable castings are anxious to assist you in getting maximum "usability." Why not let their modern design, testing and production facilities work for you?

Send for Special Data Unit

Your copy of Data Unit No. 101 containing additional information on the benefits you can derive from Malleable iron castings is available from any member of the Malleable Castings Council. If you wish, you may direct your request to **Malleable Castings Council, Union Commerce Building, Cleveland 14, Ohio.**

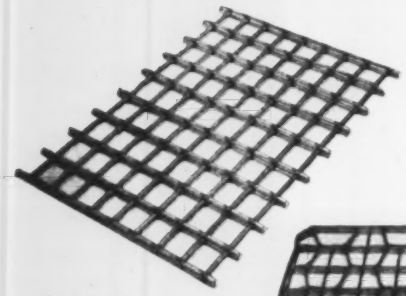
ROLOCK

FABRICATED HEAT AND CORROSION RESISTANT ALLOYS

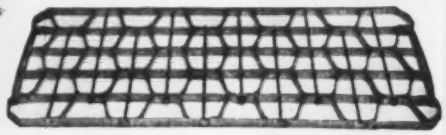
SILVER PLATTER SAVINGS

are served with these

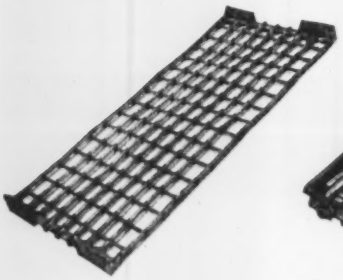
ROLOCK TRAYS



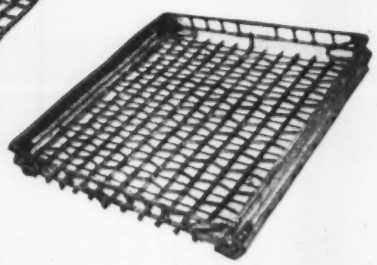
"Pressure Welded"
Furnished 2-layer
or 3-layer



"Serpentine"



"Pressure Welded"
with pusher pads



"Serpentine"
with load-retaining sides

ROLLER HEARTH FURNACE users have found these two basic Rolock Tray designs . . . and many possible variations . . . at once efficient and economical.

Not only can Rolock design and construction reduce tray weight (often by 25% to 50%) and thus increase pay-load, but service records frequently show that tray life has doubled or tripled.

These worthwhile savings have resulted from Rolock's engineering approach to tray design, taking into consideration details of the furnace hearth, tray load and weight ratios, method of operation, temperature limits and gradients and many other factors.

Complementing correct design, Rolock's unique "Serpentine" and "Pressure-Welded" construction features have proved to be, in many installations, the answer to problems of rapid tray deterioration. That is why Rolock today is a major supplier of furnace trays of these and many special types.

Why not make your own test. Let Rolock design and build your next replacements.

SALES AND SERVICE REPRESENTATIVES FROM COAST TO COAST

ROLOCK INC., 1262 KINGS HIGHWAY, FAIRFIELD, CONN.

JOB-ENGINEERED for better work
Easier Operation, Lower Cost

1RLS9

NEW Literature

Write directly to the company for a copy

Lubricating Miniature Bearings

This manual gives information on the various types and brands of oils and greases available to designers and users of miniature bearings. Miniature Precision Bearings Inc., Keene, N. H.

Heavy Duty Fans

Mechanical Draft and other heavy-duty fans are described in a 28-page bulletin. FD-905. Buffalo Forge Co., Buffalo 5, N. Y.

Vibration Control Guide

A bulletin describes vibration control mountings and materials available to solve problems in industrial installations. Vibration Mountings Inc., 98-15 50th Ave., Corona, N. Y.

Optical Equipment Catalog

"Optical Products," 24 pages, lists current catalogs. The index is divided into consumer, ophthalmic, scientific, and technical products. L-86. Bausch & Lomb Optical Co., 635 St. Paul St., Rochester 2, N. Y.

Aluminum Machining Handbook

"Machining Aluminum," a 32-page booklet, gives data on machining practices, tool angles and designs, and tool materials. Reynolds Metals Co., PRD-3, Box 2346, Richmond 18, Va.

Titanium Booklet

A 36-page booklet gives technical information on how titanium is made, products, and applications. Harvey Aluminum, 19200 S. Western Ave., Torrance, Calif.

For Industrial Truck Owners

This booklet discusses the factors that will help you determine whether to rebuild industrial trucks or to purchase new models. Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio.

Temperature-Millivolt Chart

This chart converts Fahrenheit or Centigrade temperatures, in 5 degree increments, to millivolt values for eight different thermocouple calibrations. Thermo Electric Co. Inc., Saddle Brook, N. J.

Aluminum Mill Products

A complete listing and description of this company's products is given in a 24-page booklet. Kaiser Aluminum & Chemical Sales Inc., 919 N. Michigan Ave., Chicago 11, Ill.

Strain Gages and Instruments

Catalog SR-4 lists over 250 types of bonded filament resistance strain gages. Electronics & Instrumentation Div., Baldwin-Lima-Hamilton Corp., Waltham, Mass.

Full Line of Cutting Tools

Two catalogs, No. 59 and No. 59-A, show a selection of carbide cutting tools, blanks, and inserts. Wendt-Sonis Co., Tenth and Collier Streets, Hannibal, Mo.

CALENDAR
OF MEETINGS

Mar. 9-10, International Acetylene Association: Annual meeting, Roosevelt Hotel, New Orleans. Association's address: 30 E. 42nd St., New York 17, N. Y. Secretary: L. G. Matthews.

Mar. 9-10, Steel Founders' Society of America: Annual meeting, Drake Hotel, Chicago. Society's address: 606 Terminal Tower, Cleveland 13, Ohio. Executive vice president: F. Kermit Donaldson.

Mar. 9-12, American Society of Mechanical Engineers: Aviation conference, Statler-Hilton Hotel, Los Angeles. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: O. B. Schier.

Mar. 9-13, National Association of Manufacturers: Institute on industrial relations, Hollywood Beach Hotel, Hollywood, Fla. Association's address: 2 E. 48th St., New York 17, N. Y. Institute's director: Sybyl Patterson.

Mar. 10, Society of American Military Engineers: Symposium on industry and defense, Penn-Sheraton Hotel, Pittsburgh. Information: Miss Mary Busch, Pittsburgh Post, Society of American Military Engineers, 925 New Federal Bldg., Pittsburgh 19, Pa.

Mar. 11-12, Instrument Society of America: Annual iron and steel conference, Pittsburgh. Information: R. E. Blackwell, Pittsburgh Section ISA, Box 1346, Pittsburgh 30, Pa.

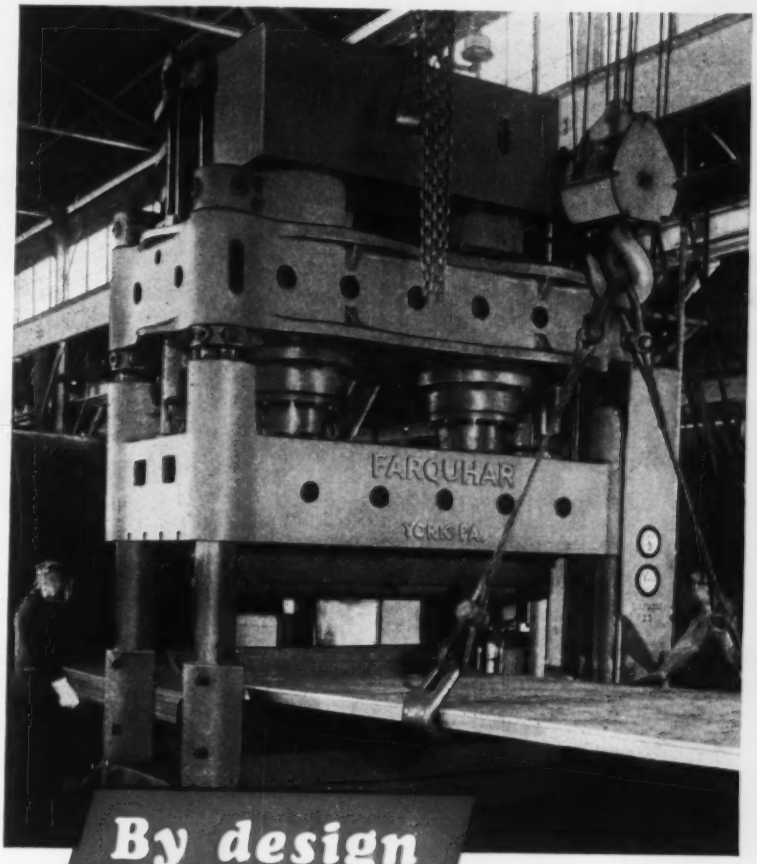
Mar. 11-13, Pressed Metal Institute: Spring technical meeting, Pick-Congress Hotel, Chicago. Institute's address: 3673 Lee Rd., Cleveland 20, Ohio. Managing director: Harold A. Daschner.

Mar. 16-18, Society of Automotive Engineers: National passenger car, body, and materials meeting, Sheraton-Cadillac Hotel, Detroit. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Mar. 16-20, American Institute of Chemical Engineers: Winter meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Institute's address: 25 W. 45th St., New York 36, N. Y. Secretary: F. J. Van Antwerpen.

Mar. 16-20, National Association of Corrosion Engineers: Annual conference and exhibit, Sherman Hotel, Chicago. Association's address: 1061 M&M Bldg., Houston 2, Tex. Secretary: T. J. Hull

Mar. 16-20, Western Metal Exposition & Congress: Pan-Pacific Auditorium and Ambassador Hotel, Los Angeles. Sponsor: American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio. Assistant secretary: Ray T. Bayless.



By design

this OLIVER-FARQUHAR Forming Press will cut your production rejects

By design this 1000-Ton Oliver-Farquhar Four-Column Hydraulic Forming Press has unusually rigid construction. This guarantees minimum deflection under full tonnage loads and close tolerance operation for accurate, high-output production. By design it can be equipped with either manual or electric pushbutton controls. You can select the controls to match your production requirements. By design special high and low pressure fluid circuits are incorporated in this press. Fast advance, controlled pressing and fast return of the rams assure maximum production.

Oliver-Farquhar Hydraulic Presses are available in popular standard sizes from 50 to 5000-ton capacities. O-F Mechanical Gap Presses are available in 75 to 200-ton capacities. You are invited to write, wire or phone for details on these presses or, better still, ask for our proposals or recommendations. And remember, Oliver-Farquhar Conveyors can be designed and built to give you the ultimate in automated loading and unloading for maximum press production.

The Oliver Corporation
A. B. FARQUHAR DIVISION
Press and Special Machinery Departments
York 52, Pennsylvania

OLIVER Farquhar PRESSES

Also Manufacturers of Farquhar Conveyors

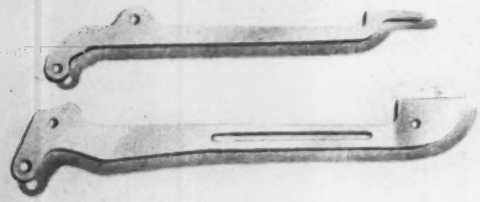
A BETTER START

for YOUR product with Cold Rolled Spring Steel

HERE'S HOW A "BETTER START" MADE THESE PRODUCTS BETTER:

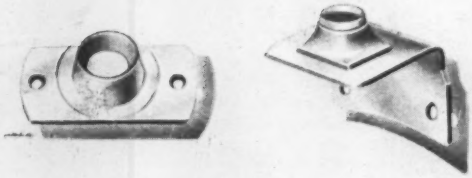
BUSINESS MACHINE PARTS:

- Eliminated grinding for gauge accuracy
- Improved stamping properties
- Reduced warpage in heat treatment
- Improved forming qualities



FASTENERS:

- Improved drawing qualities
- Reduced rejects
- Lowered production costs
- Cut quality control costs



COLD ROLLED SPRING STEEL MET THESE RIGID SPECIFICATIONS:

ANALYSIS: AISI 1055 • **ROCKWELL:** B 85-95
MICROSTRUCTURE: Uniform grain structure and carbide distribution
GAUGE TOLERANCE: ± .0003" including crown
WIDTH TOLERANCE: ± .005"
SIZE: 2" x .0384"
FINISH: No. 2 • **EDGE:** No. 3
COIL SIZES: 200/250 lbs. per in. width

ANALYSIS: AISI 1045 • **ROCKWELL:** B 72 max. Deep drawing qualities
MICROSTRUCTURE: Well rounded and uniformly distributed carbides in a ferrite matrix
GAUGE TOLERANCE: ± .001"
WIDTH TOLERANCE: ± .005"
SIZE: 1½" x .020"
FINISH: No. 2 • **EDGE:** No. 3
COIL SIZES: 200/250 lbs. per in. width

Starting with a better material – quality controlled to *your* exact specifications for the product you make – assures a *better* product – with *important savings* to you.

J&L is your most dependable source for *quality controlled* cold rolled spring steel to standard specifications – or to meet the most exacting demands of your product's custom specifications.

Give your product that all-important "Better Start". Contact J&L today.

Plants and Service Centers: Los Angeles • Kenilworth • (N. J.) • Indianapolis • Youngstown

STRIP

LOW CARBON • HIGH CARBON • ALLOY • STAINLESS
TEMPERED SPRING STEEL • ZINC AND COPPER COATED

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Youngstown 1, Ohio

March 9, 1959

Steelmakers Smash Production Record

INGOT PRODUCTION hit an all-time high last week as steelmakers struggled to keep pace with their customers' demands.

Operating their furnaces at 90.5 per cent of capacity (up 1.5 points), they turned out 2,562,000 net tons of steel for ingots and castings. In their best previous week (Dec. 17-23, 1956), they produced 2,525,000 tons.

Last week's record was a long time in the making, but chances are it'll soon be broken. Steelmaking operations may reach 95 per cent of capacity before the first half ends. In that event, we'll have a 2,690,000 ton week. Capacity operations aren't likely because: Demand for some products (rails, wire, pipe, and structurals) is relatively light. 2. Producers don't want to use high-cost, obsolete facilities.

OUTPUT TOPS CONSUMPTION— Although metalworking's business is on the mend, the recovery hasn't been strong enough to justify current steel buying. These factors explain the rush: 1. Users carried liquidation too far last year, and they're trying to bring their inventories up to normal. 2. "Normal" inventories aren't big enough because mill deliveries are slower than usual. 3. As consumption rates increase, inventory targets are constantly being revised. 4. Strike fears encourage hedging.

SHEET DEMAND LEVELS— Midwestern mills are getting fewer orders for sheets—principally because they have almost nothing left to sell. In the East, demand is leveling off as consumers decide that they're adequately protected or pause for a second look.

CUSTOMERS APPLY PRESSURE— Since most steelmakers are sold out of sheets for the first half, they're concentrating on production problems. Although the order rush has slackened, there has been no letup in pressure from customers who think they may not have been given a fair shake. Those who were fortunate enough to get on the books show no disposition to push back releases or cancel. But this comment is being heard with increasing frequency: "If the steel labor talks in June look like they're going to result in a peaceful settlement, we'll have the damnedest revision of releases you ever saw."

BARS IN TIGHTER SUPPLY— Demand for bars reflects a marked improvement in current consumption and continued emphasis on inventory building. Stocks of some consumers are so low that they're in immediate need. Others, fearing a strike, are requesting May and June delivery of material that won't be needed until the third quarter. Knowing that bar mills expect little third quarter business, some consumers are making this proposition: They'll place orders for August and September delivery if sellers will guarantee to ship at today's prices.

STAINLESS LOOKS BRIGHTER— Producers of stainless sheets are boosting their output to meet improved demand in all markets. Strip producers have seen a moderate pickup.

J&L IN ELECTRICAL STEELS— Entering a market in which it has never previously participated, Jones & Laughlin Steel Corp. is taking orders for a series of new carbon electrical steels.

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*Current prices were published in the Mar. 2 issue and will appear in subsequent issues.

4 Groups Take More Steel, 17 Less

FOUR MARKETS for shipments of finished steel from mills in the U. S. took more tonnage in 1958 than in 1957. They did this in the face of a drop of nearly 20 million tons (25 per cent) in the total amount of all grades of steel shipped.

The four: Contractors' products; agricultural; appliances, utensils, and cutlery; and containers.

Declines were registered in the other 17 market groups in the American Iron & Steel Institute's annual summary of mill shipments.

Steel service centers (jobbers, dealers, distributors) continued as the biggest single market for mill shipments of finished steel. They took 18.20 per cent of 1958 shipments, vs. 18.16 per cent in 1957. The automotive industry retained its grip on second place, but its take dwindled slightly from 17.81 per cent in 1957 to 16.90 per cent last year. Construction (including maintenance) stayed in third place, but its share dropped from 15.67 per cent to 14.56. Containers firmed their hold on fourth place by taking 10.96 per cent of 1958 mill shipments, compared with 7.81 per cent in 1957.

Mill shipments of alloy steel (other than stainless) were 1,399,364 net tons (29.50 per cent) less in 1958 than in 1957. Similarly, stainless and heat resisting steel fell 126,263 tons, or 20.37 per cent.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

Distribution of Finished Steel in 1958 by Market Classification

Net tons of mill shipments of all grades, including carbon, alloy, stainless and heat resisting steel

Market Classification	Ingots, Blooms, Billets, Slabs, Sheet Bars, & Seamless Tube Rounds	Skelp	Wire Rods	Structural Shapes (heavy)	Steel Piling	Plates	Standard Rails (over 60 lb)	Rails (all other)	Joint Bars	Tie Plates
Converters, Processors	284,523	81,059	249,851	734	.....	186,977	4	28	368	19
Forgings (except automotive)	448,020	.....	.....	.....	.....	5,764	.....	.....	.....	.....
Bolts, Nuts, Rivets, Screws	20,485	.....	214,901	.....	.....	8,467	.....	.....	.....	.....
Jobbers, Dealers, Distributors	17,374	66	114,230	676,286	35,527	639,483	6,083	11,264	1,312	279
Construction, Maintenance	70,214	.....	26,824	2,411,756	357,416	1,588,785	28,078	8,729	1,610	3,448
Contractors' Products	2,717	.....	37,742	21,868	.....	139,440	.....	57	.....	.....
Automotive	327,966	.....	46,873	36,076	.....	239,287	.....	.....	.....	.....
Rail Transportation	13,611	.....	39	159,122	396	302,661	393,554	7,112	23,209	78,755
Shipbuilding, Marine Equip.	6,521	.....	.....	104,553	1,360	596,842	54	369	1	.....
Aircraft	13,326	.....	.....	2,691	.....	7,215	.....	.....	.....	.....
Oil & Gas Drilling	12,700	.....	423	19,281	771	17,538	.....	.....	.....	.....
Mining, Quarrying, Lumbering	2,373	.....	53	18,064	787	38,044	5,227	5,838	670	1,196
Agricultural	25,622	.....	7,963	44,397	.....	96,737	.....	.....	.....	.....
Machinery, Indust. Equip., Tools	103,410	.....	130,372	183,680	.....	840,391	1,943	2,899	91	237
Electrical Machinery & Equip.	4,891	.....	22,521	21,418	.....	131,434	.....	.....	.....	.....
Appliances, Utensils, Cutlery	5	.....	683	1,283	.....	9,569	.....	.....	.....	.....
Other Domestic, Commercial Equip.	106	.....	25,680	2,886	.....	20,146	.....	.....	.....	.....
Containers	1,140	.....	609	316	20	22,935	.....	.....	.....	.....
Ordnance & Other Military	58,577	.....	30	4,605	.....	86,499	1,145	35	39	83
Export	4,056	32,421	15,759	255,353	43,695	284,202	103,232	2,830	6,430	24,748
Unclassified	2,600	.....	383	239	.....	6,004	.....	745	164	15
Totals	1,420,237	113,546	894,936	3,964,608	439,972	5,268,420	539,320	39,906	33,894	108,780

Market Classification	Mechanical Tubing	Pressure Tubing	Wire, Drawn	Nails & Staples	Wire, Barbed & Twisted	Woven Wire Fence	Bale Ties & Baling Wire	Black Plate	Tin & Terne Plate (hot dipped)	Tin & Terne Plate (electrolytic)
Converters, Processors	1,761	1,531	944,556	1,366	636	44	34	5,262	553	2,219
Forgings (except automotive)	.....	.....	24	.....	.....	.....	.....	.....	.....	.....
Bolts, Nuts, Rivets, Screws	.....	.....	202,091	.....	.....	.....	.....	179	.....	.....
Jobbers, Dealers, Distributors	96,730	58,974	221,185	387,145	53,355	152,539	54,907	87,405	16,646	84,401
Construction, Maintenance	6,019	8,689	51,539	6,243	458	2,552	9	3,999	447	2,189
Contractors' Products	23,750	2,956	67,018	907	.....	289	.....	21,103	1,645	3,738
Automotive	118,611	10,374	155,412	330	.....	.....	.....	11,053	3,500	19,018
Rail Transportation	700	667	1,250	2,258	602	1,072	.....	156	27	317
Shipbuilding, Marine Equip.	431	1,080	323	5	.....	.....	.....	7	.....	.....
Aircraft	2,881	373	916	3	.....	.....	.....	45	.....	21
Oil & Gas Drilling	7,732	952	102	6	.....	.....	.....	.....	.....	.....
Mining, Quarrying, Lumbering	1,379	21	1,707	97	2	11	.....	.....	5	1
Agricultural	22,207	771	12,754	157	116	163	.....	192	13	668
Machinery, Indust. Equip., Tools	131,624	51,286	166,772	2,733	.....	.....	.....	9,180	2,872	15,361
Electrical Machinery & Equip.	7,614	1,289	47,040	239	45	.....	.....	1,943	2,777	6,317
Appliances, Utensils, Cutlery	9,427	4,030	47,798	353	.....	.....	.....	36,789	5,498	20,609
Other Domestic, Commercial Equip.	14,386	23	306,934	730	.....	.....	.....	73,250	6,095	17,141
Containers	2,022	15	62,081	5,864	6	.....	2,345	337,177	319,512	4,586,402
Ordnance & Other Military	4,840	437	2,412	15	52	4	.....	15	449	.....
Export	5,839	2,542	23,493	1,530	759	396	71	33,341	87,357	281,788
Unclassified	103,290	99,343	47,480	7,723	.....	.....	.....	.....	.....	.....
Totals	561,243	245,353	2,362,887	417,704	56,031	157,070	57,366	621,096	447,396	5,040,190

Tables compiled by STEEL from American Iron & Steel Institute figures.

WHO GOT THE STEEL--1958

WAREHOUSES, DISTRIBUTORS	18.20%
AUTOMOTIVE	16.90
CONSTRUCTION	14.56
CONTAINERS	10.96
CONTRACTORS' PRODUCTS	5.79
MACHINERY	5.31
CONVERTERS	4.77
EXPORT	4.05
ALL OTHERS	19.46

Distribution of Alloy and Stainless Steel

(Mill Shipments, 1958)	Alloy Other Than Stainless, (net tons)	Stainless and Heat Resisting, (net tons)
Converters, Processors	52,967	55,060
Forgings (except automotive)	299,027	9,670
Bolts, Nuts, Rivets, Screws	45,968	5,699
Jobbers, Dealers, Distributors	308,533	171,556
Construction, Maintenance	98,821	8,645
Contractors' Products	11,343	13,736
Automotive	1,043,413	67,640
Rail Transportation	91,974	314
Shipbuilding, Marine Equip.	93,868	2,321
Aircraft	31,141	14,941
Oil & Gas Drilling	81,850	591
Mining, Quarrying, Lumbering	16,055	314
Agricultural	24,112	349
Machinery, Indust. Equip., Tools	379,005	41,978
Electrical Machinery & Equip.	394,350	9,682
Appliances, Utensils, Cutlery	10,709	36,924
Other Domestic, Commercial Equip.	13,015	11,524
Containers	13,887	1,362
Ordnance & Other Military	71,962	2,304
Export	147,567	14,740
Unclassified	114,282	24,142
Totals	3,343,849	493,492

Track Spikes	Wheels	Axles	Bars, Hot Rolled (and light shapes)	Bars, Concrete Reinforcing	Bars, Cold Finished	Bars, Tool Steel	Standard Pipe	Oil Country Goods	Line Pipe	Market Classification
.....	87	.....	226,773	8,020	1,736	147	32,699	3,787	2,612	Converters, Processors
.....	.....	.....	311,312	.....	1,526	493	.....	.....	.....	Forgings (except automotive)
.....	.....	.....	331,629	.....	28,606	40	.....	.....	.....	Bolts, Nuts, Rivets, Screws
3,894	74	.....	929,973	817,240	271,690	12,500	1,502,972	900,355	501,555	Jobbers, Dealers, Distributors
1,158	3,830	1,276	572,081	968,441	4,173	33	154,568	16,720	1,718,131	Construction, Maintenance
.....	.....	.....	188,483	50,494	17,460	17	129,678	.....	9,766	Contractors' Products
.....	.....	.....	1,418,061	.....	232,878	132	4,086	.....	383	Automotive
32,889	138,356	64,383	132,069	460	3,182	3	3,586	.....	208	Rail Transportation
.....	35	.....	40,644	76	3,814	26	7,562	.....	8,979	Shipbuilding, Marine Equip.
.....	.....	.....	12,548	.....	6,876	50	280	.....	112	Aircraft
.....	94	.....	76,497	146	5,441	.....	5,631	130,068	19,247	Oil & Gas Drilling
342	1,563	693	77,887	232	2,686	563	1,771	706	534	Mining, Quarrying, Lumbering
.....	.....	.....	337,061	254	67,208	.....	30,208	.....	629	Agricultural
5	4,542	341	566,056	.....	249,041	10,328	22,371	.....	8,106	Machinery, Indust. Equip., Tools
.....	116	2	104,088	.....	26,438	23	228,833	.....	3,881	Electrical Machinery & Equip.
.....	.....	.....	14,673	148	28,843	87	6,521	.....	213	Appliances, Utensils, Cutlery
.....	.....	.....	60,537	136	28,586	129	7,291	.....	390	Other Domestic, Commercial Equip.
.....	.....	.....	4,160	.....	59	.....	1,316	.....	.....	Containers
12	.....	.....	25,064	.....	9,585	32	167	.....	571	Ordnance & Other Military
2,160	7,014	4,100	103,328	27,901	6,289	90	35,399	106,480	301,243	Export
.....	.....	.....	113,639	161,247	27,300	45,577	.....	.....	31,636	Unclassified
40,460	155,711	70,795	5,646,563	2,034,795	1,023,417	70,270	2,174,939	1,158,116	2,608,196	Totals

Sheets, Hot Rolled	Sheets, Cold Rolled	Sheets, Galvanized	Sheets, Coated (all other)	Sheets & Strip, Electrical	Strip, Hot Rolled	Strip, Cold Rolled	Net Totals	Percentage of Totals	Market Classification
420,203	267,484	16,349	2,257	174	63,665	47,056	2,854,574	4.77	Converters, Processors
75	3	.....	.....	.....	.....	.....	767,217	1.28	Forgings (except automotive)
48,121	3,380	415	.....	.....	5,440	15,119	878,873	1.47	Bolts, Nuts, Rivets, Screws
882,985	1,270,461	900,444	12,376	3,578	116,970	60,025	10,902,283	18.20	Jobbers, Dealers, Distributors
363,604	118,306	161,062	5,721	14	46,553	7,874	8,722,549	14.56	Construction, Maintenance
700,212	839,446	1,021,338	13,628	598	74,973	97,866	3,467,189	5.79	Contractors' Products
2,278,614	4,426,805	133,215	97,347	2,982	298,697	263,334	10,125,034	16.90	Automotive
77,163	8,508	13,214	93	2,013	10,010	467	1,472,112	2.46	Rail Transportation
10,741	3,034	6,690	2,900	233	867	364	797,511	1.33	Shipbuilding, Marine Equip.
5,313	3,794	1,363	193	162	1,224	2,823	62,209	0.10	Aircraft
5,933	2,309	357	1	38	614	42	305,923	0.51	Oil & Gas Drilling
10,187	1,721	558	45	38	3,955	549	179,505	0.30	Mining, Quarrying, Lumbering
208,640	72,761	187,601	2,077	46	71,359	3,510	1,193,114	1.99	Agricultural
295,373	195,658	29,748	6,430	7,773	90,451	52,122	3,181,196	5.31	Machinery, Indust. Equip., Tools
184,087	397,006	45,964	9,269	396,114	50,652	77,513	1,771,514	2.96	Electrical Machinery & Equip.
102,931	1,056,765	108,847	15,879	7,631	18,627	92,886	1,590,095	2.65	Appliances, Utensils, Cutlery
106,472	837,134	67,670	4,915	3,539	34,668	96,698	1,715,542	2.86	Other Domestic, Commercial Equip.
411,627	513,098	44,431	1,137	.....	142,776	109,535	6,568,583	10.96	Containers
19,599	11,568	3,150	42	2,920	2,133	4,610	238,690	0.40	Ordnance & Other Military
157,338	296,420	86,432	15,753	48,352	12,942	8,066	2,429,149	4.05	Export
2,048	.....	.....	.....	.....	1,588	40,550	691,571	1.15	Unclassified
6,291,266	10,325,661	2,828,848	190,063	476,205	1,048,164	981,009	59,914,433	100.00	Totals

Sheets, Strip . . .

Sheet & Strip Prices, Pages 107 & 108

Although sheet and strip producers continue under tremendous pressure to accept orders from consumers whose inventories are dangerously low, demand appears to be leveling slightly. That's probably because: Many users are more adequately covered on strike hedge tonnage. The mills are tightening on their order acceptances.

In other years, sheetmakers were accused of pushing their customers into the market (particularly when a strike threatened). This year, though, buyers are doing the pushing. But the demand isn't entirely due to strike hedging; a good deal of it is generated by users' belief that prices will rise this summer, strike or no strike.

• **Well Protected**—Many consumers of cold-rolled and galvanized sheets (two grades in tightest supply) feel they are sufficiently protected for the remainder of the first half, and for a reasonable period beyond. As for hot-rolled sheets and specialties, on which deliveries are not as extended, they do not appear to be pressing quite as hard for tonnage as they were a month ago.

They seem to be coasting for the present, while taking a second look at the situation. Most users expect a steel strike, but they're not sure it will necessarily come with the general termination of mill labor agreements at the end of June. They feel a walkout could conceivably come later in the summer, when the steelworkers might be strengthened by the end of the vacation season, and the approach of the seasonal fall upturn in manufacturing activity.

• **Berlin Watched** — The increasingly critical international political situation may also provide a reason for consumers to take a second look at their market position. There have been many "emergencies" during the postwar years, but the curren Berlin crisis seems to be more serious than most of the others. In periods of mounting international uncertainty, there is often a disposition for market activity to slow down pending clarification of the outlook.

Trading continues brisk in sheets and strip. Producers, in addition to being well committed on cold-rolled and galvanized throughout the first half, are booked solidly into early May on hot rolled, with increasing commitments beyond that month.

Also, they're well booked into second quarter on enameling and electrical sheets. Demand for the latter is strong not only from makers of household appliances, but also for distribution generators. Improvement in power generator needs (a longer term proposition) is less noticeable.

• **Heavily Booked**—Actually, sellers say there is not one important grade in the flat-rolled category in which they are not fully booked up for the second quarter. In an effort to discourage speculative buying, they are screening all inquiries closely. In some cases, the mills have turned back tonnage orders which they considered in excess of customers' normal buying patterns.

Automotive parts suppliers and appliance manufacturers are ordering substantial tonnage, and are pressing for deliveries by June 30. General Motors Corp. is stepping up its releases again, after the recent slowdown when Buick assemblies were curtailed.

Hot strip producers now are solidly booked on material 4 to 22 in. wide, but they still can take orders for first half delivery on narrow bands (mill edge only).

If it begins to look like there won't be a strike, there'll probably be wholesale revision of order books as consumers cancel tonnage, and hold up shipment releases.

Tin Plate . . .

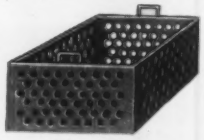
Tin Plate Prices, Page 108

Use of tin plate in the manufacture of containers for soft drinks is increasing. In part, the trend accounted for high level demand for tin plate when other steel products were moving slowly.

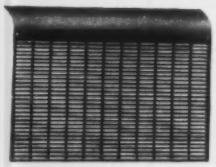
To meet rising requirements, the steel industry has been installing additional facilities. Jones & Laughlin Steel Corp. has installed new facilities at its Aliquippa Works at a cost of $35 million. The works now produces electrolytic tin plate in standard and heavy gages and black plate and hot dipped tin plate in increased quantities.

It's estimated that the sale of soft drink cans this year will be about

Perforated Metal Products and Parts



Pickling Basket



Air Inlet Screen for Oil Burner

We, of course, supply manufacturers with perforated metal sheets and plates in a wide variety of sizes and shapes, from which they produce their own products and parts, but we are also fully equipped to relieve them of a great deal of this work. We weld, spot-weld, or rivet, stiffeners and angles to the pieces and can form or flange them to special shapes as required. The items here shown are typical of hundreds we have furnished to other manufacturers during nearly a half century of successful experience.

Perforated Metal, spot-welded to specially formed angles.

YOU'LL SAVE MONEY in most cases, by placing orders with us for perforated metal parts, to be delivered in lots throughout the year in accordance with your production schedules. Specialized equipment and procedures will usually enable us to do the work at lower cost than it could be done in your own shops. Send us your blue prints and specifications. When given sufficient information, our engineers are often able to make money-saving suggestions and always welcome an opportunity to do so.

DIAMOND MANUFACTURING CO., WYOMING (Wilkes-Barre Area) **PENNA.**

New Bulletin No. 51, Describes DIAMONTEX Perforated Metal Lay-in Panels for Modern Acoustical Ceilings.

10 per cent above last year's figure —36,660 tons of tin plate, or 405 million cans. It means an increase of 20 per cent over 1957, when 33,743 tons of tin plate went into soft drink cans. Estimates for 1959 place output at 446 million cans. Sales could go to 350,000 tons by 1965.

Wire . . .

Wire Prices, Pages 108 & 111

Demand for wire products hasn't moved up as fast as that for most steel products, but in the manufacturers' products there is a disposition for users to order farther ahead.

For some products, there is still space on mill books in March, and there is adequate room in April schedules.

Indications are Midwest consumers are buying wire products a little more orderly than is the case in some other marketing areas. Users are not waiting with the expectation of acquiring their inventories in the last two months before a possible steel strike.

Merchant products are just starting to move. First quarter tonnage is expected to better 1958's corresponding period by 25 per cent. Manufacturers' wire volume will probably be 40 per cent better than a year ago.

Steel Bars . . .

Bar Prices, Page 106

The upswing in hot carbon bar inquiry is accelerating. Lagging behind light flat rolled steel demand in the current recovery, bars are now closing the gap. Some leading sellers are booked solidly into April, and have substantial bookings for shipment beyond. They anticipate high operations throughout the second quarter.

Demand reflects a marked improvement in consumption, and continued emphasis on inventories. Stocks of some consumers are so low they're in immediate need of tonnage. Others, fearing a strike induced shortage this summer, are requesting May and June delivery, though it won't be needed until the third quarter. Buyers seem unconcerned about the financial aspects of inventory building.

The betterment in demand is also noted in cold-drawn carbon and alloy bars, and in hot alloy bars. Only tool steel demand seems to be really lagging, a situation that has prevailed for some time.

Although they're added shifts and recalled furloughed workmen, cold drawers can't turn out as much material as they could sell. Reason: They're getting eight week delivery promises from hot mills.

The gain in hot carbon bar inquiry is fairly general in some areas. In general, automakers, fastener manufacturers, screw machine interests, and electrical equipment suppliers are buying fairly heavy volume. Demand from appliance makers and distributors is relatively slow.

Tubular Goods . . .

Tubular Goods Prices, Page 112

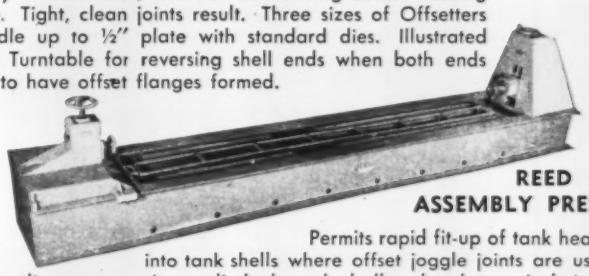
"We expect price increases, regardless of a midyear strike, and we're buying for shipment before June 30."

That's the way one of the largest pipe fabricating companies describes its pipe buying policy. Most pur-

WEBB TANK PRODUCTION MACHINERY

REED OFFSETTER

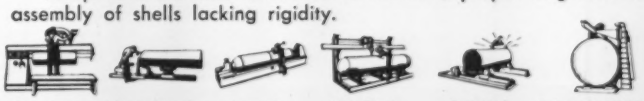
This machine forms an offset flange around shell ends to facilitate automatic welding of tank heads. It eliminates chill rings, decreases fit-up time, improves the concentricity of shell ends, and aids in reducing actual welding time. Tight, clean joints result. Three sizes of Offsetters handle up to ½" plate with standard dies. Illustrated with Turntable for reversing shell ends when both ends are to have offset flanges formed.



REED ASSEMBLY PRESS

Permits rapid fit-up of tank heads into tank shells where offset joggle joints are used. Hydraulic pressure is applied through ball-and-socket swivel joints that allow the head cups to set to the head. Hydraulically powered kick-outs speed up loading and unloading. Both headstock and tailstock are adjustable vertically; tailstock is also adjustable along the bed for various lengths of vessels up to 18'.

Fit-up rolls are also available to facilitate proper alignment and assembly of shells lacking rigidity.



Horn Type Fixtures | Cylinder Flange Offsetters | Assembly Fixtures | Unit Type Turning Rolls | Portable Turning Rolls | Automatic Welding Track Supports

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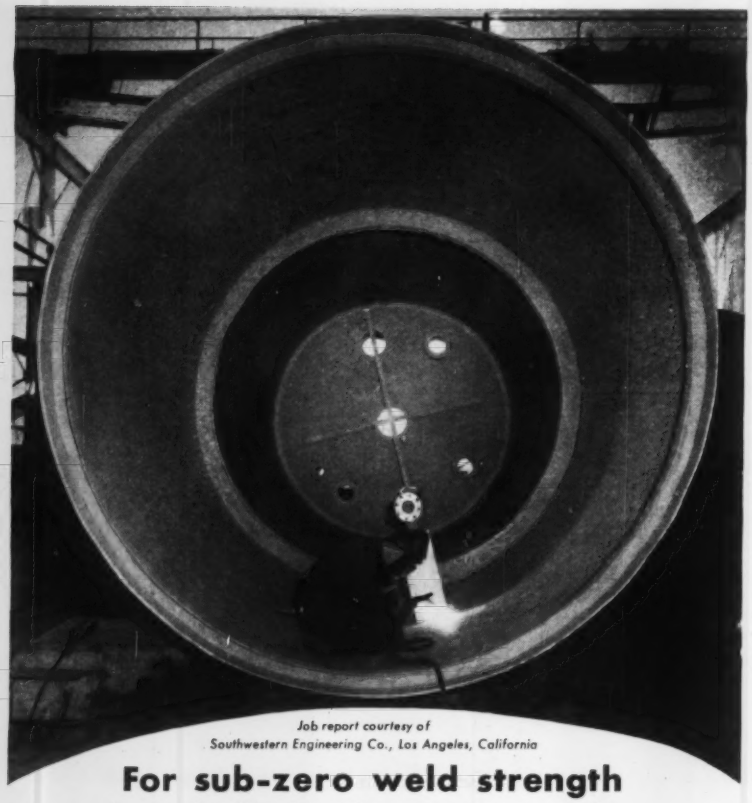
REED EQUIPMENT DIVISION
THE WEBB CORP. WEBB CITY, MO. U. S. A.



Job report courtesy of
Southwestern Engineering Co., Los Angeles, California

For sub-zero weld strength in missile fuel storage tanks

WELD WITH ARCOS

STAINLESS ELECTRODES

When completed, this tank will hold a liquid propellent fuel under 125 lbs. psi. Service temperatures will range from plus 200°F down to *minus* 300°F. The customer selected type 321 stainless for the vessel. To assure required impact strengths at extreme temperatures, Arcos STAINLEND 19/9Cb electrodes were recommended. This top quality weld metal joins the heads, shell seams, fittings and all attachments. Again—the tougher the test, the greater the need for Arcos. ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Pa.

chasers buying directly from the mills are following the same sort of policy.

Demand for seamless tubing extends into May. Volume for both April and May delivery is reported well above that for March. Most utilities are getting their orders on mill books, and some of the tonnage extends through June.

Mill stocks of seamless (12 in. and under) are reported being depleted; deliveries are steadily moving out.

Carbon and alloy mechanical and pressure tubing deliveries now extend eight to ten weeks.

Eastern district sellers note some improvement in demand, but they say there's nothing spectacular in the current movement. Most items are moving out of stock in the area. But demand in the Southwest is gathering momentum. Distributors of merchant pipe are not actively ordering for inventory. Their supplies of buttweld are substantial, and most mills can still ship from stock.

Northern California imports of pipe totaled 23,054 tons in the ten months ended last October. Most of it was galvanized, in sizes used for plumbing.

Distributors of cast iron pipe in the Pacific Northwest report seasonal quickening in demand is underway. Several large jobs are up for bids in the area. These include work at Tacoma and Port Angeles, Wash. A large water system expansion at Fairbanks, Alaska, involves 30,000 ft of water mains, bids on which go in at Juneau, April 1.

Reflecting the recent reduction in the price of zinc to 11 cents a pound, the prices of galvanized pipe have been automatically reduced.

Plates . . .

Plate Prices, Page 106

Inquiry for plates is expanding, with railroad needs picking up and construction requirements more active. In the latter category, highway and nonresidential construction, pipeline and heavy tank work predominate. Ship needs are well sustained.

A large Pittsburgh manufacturer of capital equipment is laying in a substantial plate inventory, although its sales haven't improved appreciably. By July 1, it expects to have enough steel on hand to

sustain operations for 90 days. While its prices may rise after midyear, this equipment interest says it's not buying for speculative reasons. Its aim is to avoid a shutdown for lack of material in event of a steel strike. Some of its suppliers have announced that they can't accept any more orders for first half delivery.

Plate fabricators in New England are placing second quarter orders in slightly heavier volume, but this tonnage would be larger if more jobs were being estimated. Welded built-up girder volume is slightly more active, and shipyard demand is holding, but the pickup in demand on heavy industrial equipment account is not exciting anyone. Still, few shops in the district want to end the first half of the year with inventories down to the current level.

Pig Iron . . .

Pig Iron Prices, Page 113

General improvement in metalworking is stimulating foundry operations, but demand for merchant pig iron has not gained appreciably. Some sellers say there has been little change in market activity since the start of the year.

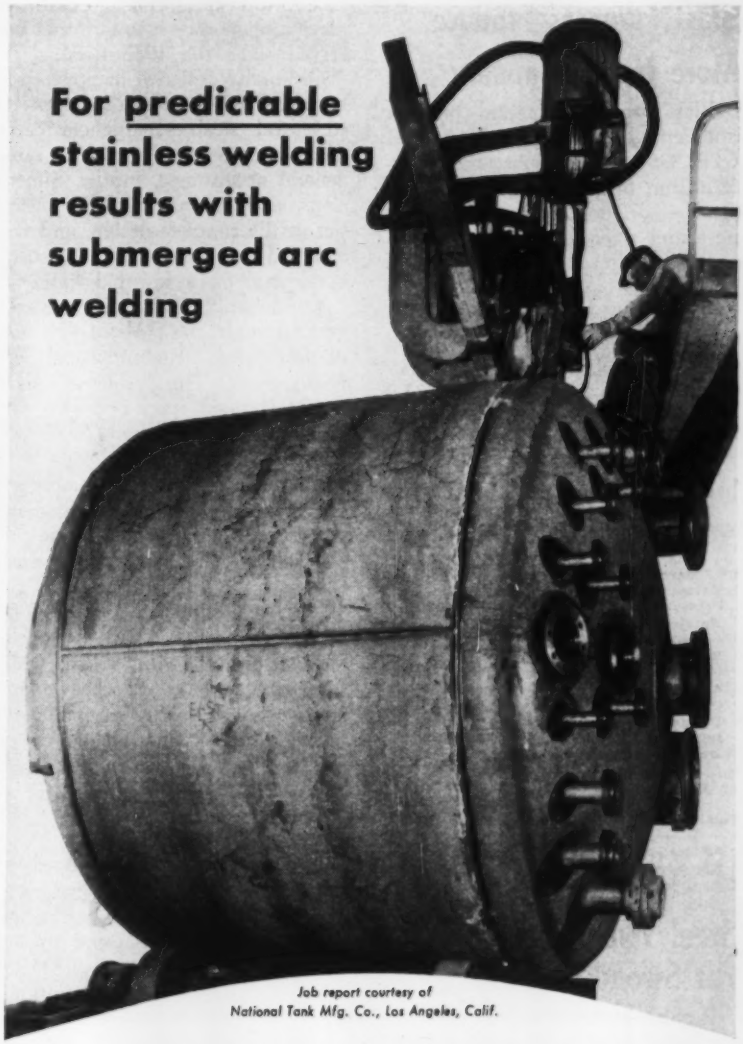
The long term outlook, however, is considered promising. A resurgence in metalworking such as has been experienced in recent weeks cannot continue for long without some noticeable impact on foundry activity. In some areas, noticeably in the Midwest, there has been some pickup as result of stronger demand for automotive castings.

Most foundries in western New York continue to operate on three and four day week schedules. Consumers of merchant iron are buying conservatively, apparently not being too concerned over a possible midyear steel strike.

Some blast furnace capacity is still idle. But additional stacks are being restored to production weekly. Last week, Sharon Steel Corp.'s No. 3 blast furnace at Farrell, Pa., had a breakout only a few days after the company had started up its No. 2 furnace. No. 3 stack will be down about 30 days for a relining job.

Republic Steel Corp. has started up its No. 5 blast furnace at Youngstown, the fourth unit in production at that works.

For predictable stainless welding results with submerged arc welding



Job report courtesy of National Tank Mfg. Co., Los Angeles, Calif.

use ARCOSITE BONDED FLUX

This 4,000-gallon tank for a resin reactor will handle highly corrosive material at temperatures of 500° to 600°F. Stainless top and bottom heads of type 316L were submerged arc welded to the body with Arcosite Flux and Arcos Chromenar Stainless Wire. This combination gives the proper weld metal chemistry for the needed corrosion resistance and an economical solution to the problem. ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Penna.

Blast Furnaces Produce More Iron in January

Blast furnace production (pig iron and ferroalloys) in January totaled 6,260,395 net tons, reports the American Iron & Steel Institute. Of the total, 48,572 tons were ferromanganese and spiegeleisen. In the preceding month, output was 6,072,890 tons (including 47,505 tons of ferroalloys), and in January, 1958, the total was 4,854,444 tons (including 69,175 tons of ferroalloys).

Furnace operations averaged 77.9 per cent of capacity in January, vs. 78.6 in December, and 62.8 per cent in January, 1958. Production by states in January:

Blast Furnace Output—January, 1959
(Net tons)

By States:	Production	% of Capacity
Massachusetts, New York	359,809	69.0
Pennsylvania	1,592,967	71.0
Maryland, Virginia, West Virginia	559,462	79.8
Kentucky, Tennessee, Texas	151,660	82.6
Alabama	359,990	73.9
Ohio	1,151,686	74.5
Indiana	809,761	98.3
Illinois	508,302	75.8
Michigan, Minnesota	412,545	88.6
Colorado, Utah, California	354,273	89.9
Total	*6,260,395	77.9

*Includes 48,572 tons of ferromanganese and spiegeleisen.
Data from American Iron & Steel Institute.

Steel Wins Over Concrete For Stroudsburg Bridge

Bethlehem Steel Co., Bethlehem, Pa., will fabricate and erect steelwork for a four lane, continuous girder bridge spanning Brodhead Creek between Stroudsburg and East Stroudsburg, Pa. It will replace a temporary structure that has served since the 1955 flood.

Originally designed in prestressed concrete, bids were also open to structural steel. Bethlehem came up with a steel structure of the same general appearance, profile, dimensions, and loadbearing characteristics as the concrete design, and was awarded the contract for the structural steel on a low bid basis.

J. Richard Nissley Inc. is the general contractor. About 630 tons of fabricated structural steel will be required. The bridge will have a 150 ft main span and two side spans, each 120 ft long. There will be two 25 ft roadways, each with two lanes, carried as separate bridges on common piers. Each roadway will have 9 in. curbs and an outside sidewalk 6 ft 9 in. wide, with a steel railing.

The steel supporting the 7½ in. concrete roadway will be shop welded girders with rolled wide-flange sections for floorbeams and stringers. All field connections will be with high strength bolts.

Distributors . . .

Prices, Page 113

Steel service centers shipped 15 to 30 per cent more tonnage in February than they did in January, and there's a strong trend toward continued improvement. That's what Pittsburgh area distributors report, and their views are pretty much in line with those of warehouse operators at most other points.

Demand has not accelerated as fast at the distributor level as it has at the mill level. But the distributors are placing orders with the mills, covering themselves against customers' probable needs later.

Some consumers are pressing for quick deliveries because their stocks aren't big enough to sustain current higher manufacturing schedules. They are not ordering stocks as a strike hedge—and probably won't until it's clear mills won't be able to accommodate them.

Buffalo district warehouses have been enjoying a steady pickup in orders as more consumers turn to them to fill immediate needs. At St. Louis, steel service center volume was better in February than it was in January. Flat-rolled items gained the most. It's estimated that demand for them last month was 20 per cent higher than it was in January and about 30 per cent above the year-ago mark.

Record rainfall during February in the Southwest washed out predictions that the month would show a zooming volume increase for the area warehouses. The Houston district was drenched with more rain than at anytime since 1908. Construction work bogged down, and deliveries of all kinds suffered.

Service centers in the Pacific Northwest anticipate accelerated demand during the second quarter. While visiting the area last week, Robert G. Welch, executive vice president, American Steel Warehouse Association, said the Pacific Coast soon should share in the business revival which originated in the East. He added that galvanized and stainless steels are in particularly strong demand.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

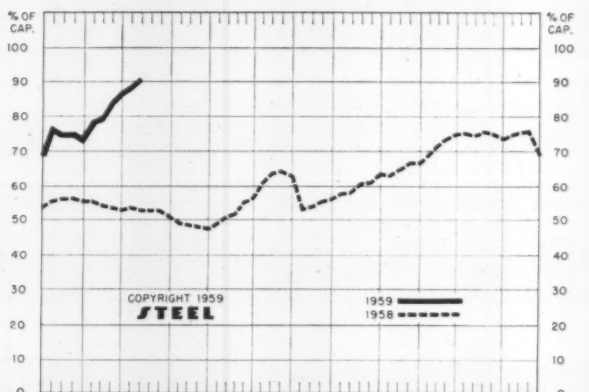
	Week Ended Mar. 8	Change	Same Week 1958	Same Week 1957
Pittsburgh	91.0	+ 2.0*	84.5	97.5
Chicago	91.0	0*	87.5	94.5
Eastern	87.0	+ 1.0	89.0	99.5
Youngstown	91.0	+ 3.0	83.0	94.0
Wheeling	93.0	+ 2.0	84.5	97.0
Cleveland	89.0	— 2.0*	36.5	90.5
Buffalo	102.5	0	36.5	100.0
Birmingham	79.5	+ 0.5	51.5	95.5
Cincinnati	93.5	— 1.0*	29.0	83.5
St. Louis	96.5	+ 2.5	79.0	95.5
Detroit	99.5	+ 4.5*	42.5	100.5
Western	95.0	+ 1.0	69.0	104.0
National Rate	90.5	+ 1.5	52.5	95.0

INGOT PRODUCTION‡

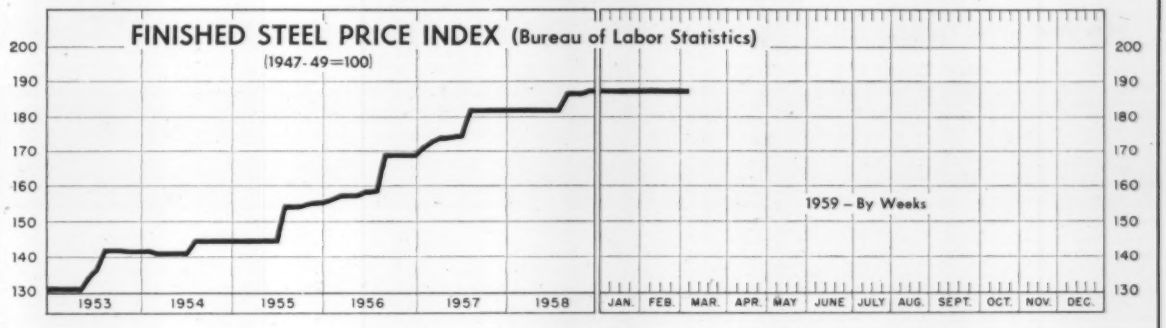
	Week Ended Mar. 8	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	157.8	156.0	142.4	88.7
NET TONS (In thousands)	2,535†	2,506	2,288	1,425

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,831,331 in 1959; 2,699,173 in 1958; 2,559,490 in 1957.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Mar. 3, 1959	Week Ago	Month Ago	Jan. Avg	Year Ago
186.9	187.0	187.0	187.0	181.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended March 3

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825
Rails, Light, 40 lb	7.292
Tie Plates	6.875
Axles, Railway	10.175
Wheels, Freight Car, 33 in. (per wheel)	62.000
Plates, Carbon	6.350
Structural Shapes	6.167
Bars, Tool Steel, Carbon (lb)	0.560
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895
Bars, H.R., Alloy	10.775
Bars, H.R., Stainless, 303 (lb)	0.543
Bars, H.R., Carbon	6.675
Bars, Reinforcing	6.385
Bars, C.F., Carbon	10.710
Bars, C.F., Alloy	14.125
Bars, C.F., Stainless, 302 (lb)	0.570
Sheets, H.R., Carbon	6.350
Sheets, C.R., Carbon	7.300
Sheets, Galvanized	8.615
Sheets, C.R., Stainless, 302 (lb)	0.688
Sheets, Electrical	12.625
Strip, C.R., Carbon	9.489
Strip, C.R., Stainless, 430 (lb)	0.493
Strip, H.R., Carbon	6.250
Pipe, Black, Buttweld (100 ft)	19.905
Pipe, Galv., Buttweld (100 ft)	23.253
Pipe, Line (100 ft)	199.53
Casing, Oil Well, Carbon (100 ft)	201.080
Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200
Tubing, Mechanical, Carbon (100 ft)	27.005
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
Tin Plate, Hot-dipped, 1.25 lb, 95 lb base box)	10.100
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800
Black Plate, Canmaking Quality (95 lb base box)	7.900
Wire, Drawn, Carbon	10.575
Wire, Drawn, Stainless, 430 (lb)	0.685
Bale Ties (bundles)	7.967
Nails, Wire, 8d Common	9.828
Wire, Barbed (80-rod spool)	8.719
Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	March 4 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	239.15	189.74
Index in cents per lb	6.713	6.713	6.713	6.479	5.140

STEEL's ARITHMETICAL COMPOSITES*

Finished Steel, NT	$149.96	$149.96	$149.96	$145.42	$113.91
No. 2 Fdry, Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	42.33	42.83	41.67	37.17	24.50

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	March 4 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld Philadelphia	5.975	5.975	5.975	5.725	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.10
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.10	4.10
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.55
Tin plate (1.50 lb) box, Pitts.	$10.65	$10.65	$10.65	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods $\frac{7}{32}$-$\frac{9}{16}$" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton	March 4 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.41	59.66
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.91	60.16
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld, Cin.	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	200.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$44.50	$44.50	$43.50	$36.50	$25.50
No. 1 Heavy Melt, E. Pa.	40.00	40.00	39.00	38.50	23.00
No. 1 Heavy Melt, Chicago	42.50	44.00	42.50	36.50	25.00
No. 1 Heavy Melt, Valley	46.50	48.50	46.50	37.50	23.50
No. 1 Heavy Melt, Cleve.	42.50	44.50	43.50	33.50	20.50
No. 1 Heavy Melt, Buffalo	39.50	41.50	35.50	28.50	25.00
Rails, Rerolling, Chicago	62.50	63.50	62.50	54.50	36.50
No. 1 Cast, Chicago	48.50	49.50	47.50	41.50	30.50

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.00	$15.00	$15.00	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	32.00	32.00	32.00	30.50	25.25

Steel Prices

Mill prices as reported to STEEL, March 4, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill point indicates producing company. Key to producers, page 107, footnotes, page 111.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$76.00

INGOTS, Alloy (NT)
Detroit S41 .....$82.00
Economy,Pa. B14 .....82.00
Farrell,Pa. S3 .....82.00
Lowellville,O. S3 .....82.00
Midland,Pa. C18 .....82.00
Munhall,Pa. U5 .....82.00
Sharon,Pa. S3 .....82.00

BILLETS, BLOOMS & SLABS Carbon, Rerolling (NT)
Bartonville,Ill. K4 ....$82.00
Bessemer,Pa. U5 .....80.00
Buffalo R2 .....80.00
Clairton,Pa. U5 .....80.00
Ensley,Ala. T2 .....80.00
Fairfield,Ala. T2 .....80.00
Fontana,Calif. K1 ....90.50
Gary,Ind. U5 .....80.00
Johnstown,Pa. B2 .....80.00
Lackawanna,N.Y. B2 ..80.00
Munhall,Pa. U5 .....80.00
Owensboro,Ky. G8 .....80.00
S.Chicago,Ill. R2, U5 ..80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 .....80.00
Youngstown R2 .....80.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$99.50
Buffalo R2 .....99.50
Canton,O. R2 .....102.00
Clairton,Pa. U5 .....99.50
Conshohocken,Pa. A3..104.50
Ensley,Ala. T2 .....99.50
Fairfield,Ala. T2 .....99.50
Farrell,Pa. S3 .....99.50
Fontana,Calif. K1 ....109.00
Gary,Ind. U5 .....99.50
Geneva,Utah C11 .....99.50
Houston S5 .....104.50
Johnstown,Pa. B2 ....99.50
Lackawanna,N.Y. B2..99.50
LosAngeles B3 .....109.00
Midland,Pa. C18 .....99.50
Munhall,Pa. U5 .....99.50
Owensboro,Ky. G8 ....99.50
Seattle B3 .....113.00
Sharon,Pa. S3 .....99.50
S.Chicago R2, U5, W14..99.50
S.Duquesne,Pa. U5 ....99.50
S.SanFrancisco B3 ..109.00
Warren,O. C17 .....99.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ..$119.00
Bridgeport,Conn. C32..119.00
Buffalo R2 .....119.00
Canton,O. R2, T7 ....119.00
Conshohocken,Pa. A3..126.00
Detroit S41 .....119.00
Economy,Pa. B14 .....119.00
Farrell,Pa. S3 .....119.00
Fontana,Calif. K1 ....140.00
Gary,Ind. U5 .....119.00
Houston S5 .....124.00
Ind.Harbor,Ind. Y1 ....119.00
Johnstown,Pa. B2 ....119.00
Lackawanna,N.Y. B2..119.00
LosAngeles B3 .....139.00
Lowellville,O. S3 .....119.00
Massillon,O. R2 .....119.00
Midland,Pa. C18 .....119.00
Munhall,Pa. U5 .....119.00
Owensboro,Ky. G8 ....119.00
Sharon,Pa. S3 .....119.00
S.Chicago R2,U5,W14..119.00
S.Duquesne,Pa. U5 ..119.00
Struthers,O. Y1 .....119.00
Warren,O. C17 .....119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$122.50
Canton,O. R2 .....125.00
Cleveland R2 .....122.50
Gary,Ind. U5 .....122.50
S.Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 ..122.50
Warren,O. C17 .....122.50

SKELP
Aliquippa,Pa. J5 .....5.05
Munhall,Pa. U5 .....5.05
Pittsburgh J5 .....5.05
Warren,O. R2 .....5.05
Youngstown R2, U5 ....5.05

WIRE RODS
AlabamaCity,Ala. R2 ..6.40
Aliquippa,Pa. J5 .....6.40
Alton,Ill. L1 .....6.60
Bartonville,Ill. K4 ....6.50
Buffalo W12 .....6.40
Cleveland A7 .....6.40
Donora,Pa. A7 .....6.40
Fairfield,Ala. T2 .....6.40
Houston S5 .....6.65
IndianaHarbor,Ind. Y1..6.40
Johnstown,Pa. B2 .....6.40
Joliet,Ill. A7 .....6.40
KansasCity,Mo. S5 ....6.65
Kokomo,Ind. C16 .....6.50
LosAngeles B3 .....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 .....6.40
N.Tonawanda,N.Y. B11..6.40
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 .....6.40
Roebling,N.J. R5 .....6.50
S.Chicago,Ill. R2, W14..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 .....6.50
Struthers,O. Y1 .....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.50
Aliquippa,Pa. J5 .....5.50
Atlanta A11 .....5.70
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa. B2 .....5.55
Birmingham C15 .....5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.30
Gary,Ind. U5 .....5.50
Geneva,Utah C11 .....5.50
Houston S5 .....5.60
Ind.Harbor,Ind. I-2, Y1.5.50
Johnstown,Pa. B2 .....5.55
Joliet,Ill. P22 .....5.50
KansasCity,Mo. S5 ....5.60
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 .....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 .....5.50
Niles,Calif. P1 .....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 .....6.25
Seattle B3 .....6.25
S.Chicago,Ill. U5, W14..5.50
S.SanFrancisco B3 .....6.15
Sterling,Ill. N15 .....5.50
Torrance,Calif. C11 ....6.20
Weirton,W.Va. W6 ....5.50

Wide Flange
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.50
Fontana,Calif. K1 .....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 .....5.50
Phoenixville,Pa. P4 ....5.55
S.Chicago,Ill. U5 .....5.50
Sterling,Ill. N15 .....5.50
Weirton,W.Va. W6 ....5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....6.90
Munhall,Pa. U5 .....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A., Std. Shapes
Aliquippa,Pa. J5 .....8.05
Bessemer,Ala. T2 .....8.05
Bethlehem,Pa. B2 .....8.10
Clairton,Pa. U5 .....8.05
Fairfield,Ala. T2 .....8.05
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....8.05
Geneva,Utah C11 .....8.05
Houston S5 .....8.15
Ind.Harbor,Ind. I-2, Y1.8.05
Johnstown,Pa. B2 .....8.10
KansasCity,Mo. S5 ....8.15
Lackawanna,N.Y. B2 ..8.10
Los Angeles B3 .....8.75
Munhall,Pa. U5 .....8.05
Seattle B3 .....8.80
S.Chicago,Ill. U5, W14..8.05
S.SanFrancisco B3 ....8.70
Sterling,Ill. N15 .....7.75
Struthers,O. Y1 .....8.05

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ..... 8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 .....8.05
S.Chicago,Ill. U5 .....8.05
Sterling,Ill. N15 .....7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 .....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 .....5.50
S.Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ..6.50
Munhall,Pa. U5 .....6.50
S.Chicago,Ill. I-2, U5 ..6.50
Weirton,W Va. W6 ....6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 .....5.30
Ashland,Ky.(15) A10 ...5.30
Atlanta A11 .....5.50
Bessemer,Ala. T2 .....5.30
Clairton,Pa. U5 .....5.30
Claymont,Del. C22 ....5.30
Cleveland J5, R2 .....5.30
Coatesville,Pa. L7 .....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 .....5.30
Fairfield,Ala. T2 .....5.30
Farrell,Pa. S3 .....5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 .....5.30
Geneva,Utah C11 .....5.30
GraniteCity,Ill. G4 ....5.40
Harrisburg,Pa. P4 ....5.30
Houston S5 .....5.40
Ind.Harbor,Ind. I-2, Y1.5.30
Johnstown,Pa. B2 .....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 .....5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 .....5.30
Newport,Ky. A2 .....5.30
Pittsburgh J5 .....5.30
Riverdale,Ill. A1 .....5.30
Seattle B3 .....6.20
Sharon,Pa. S3 .....5.30
S.Chicago,Ill. U5, W14..5.30
SparrowsPoint,Md. B2..5.30
Sterling,Ill. N15 .....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 .....5.30
Youngstown U5, Y1 ....5.30
Youngstown(27) R2 ....5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....7.05
Fontana,Calif. K1 .....7.85
Geneva,Utah C11 .....7.05
Houston S5 .....7.15
Johnstown,Pa. B2 .....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron
Economy,Pa. B14 .....13.55

PLATES, H.S., L.A.
Aliquippa,Pa. J5 .....7.95
Ashland,Ky. A10 .....7.95
Bessemer,Ala. T2 .....7.95
Clairton,Pa. U5 .....7.95
Claymont,Del. C22 ....7.95
Cleveland J5, R2 .....7.95
Coatesville,Pa. L7 .....7.95
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 .....7.95
Ecorse,Mich. G5 .....7.95
Fairfield,Ala. T2 .....7.95
Farrell,Pa. S3 .....7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 .....7.95
Geneva,Utah C11 .....7.95
Houston S5 .....8.05
Ind.Harbor,Ind. I-2, Y1.7.95
Johnstown,Pa. B2 .....7.95
Munhall,Pa. U5 .....7.95
Pittsburgh J5 .....7.95
Seattle B3 .....8.85
Sharon,Pa. S3 .....7.95
S.Chicago,Ill. U5, W14..7.95
SparrowsPoint,Md. B2 ..7.95
Warren,O. R2 .....7.95
Youngstown U5, Y1 ....7.95

PLATES, Alloy
Aliquippa,Pa. J5 .....7.50
Claymont,Del. C22 ....7.50
Coatesville,Pa. L7 .....7.50
Economy,Pa. B14 .....7.50
Farrell,Pa. S3 .....7.50
Fontana,Calif. K1 .....8.30
Gary,Ind. U5 .....7.50
Houston S5 .....7.60
Ind.Harbor,Ind. Y1 ....7.50
Johnstown,Pa. B2 .....7.50
Lowellville,O. S3 .....7.50
Munhall,Pa. U5 .....7.50
Newport,Ky. A2 .....7.50
Pittsburgh J5 .....7.50
Seattle B3 .....8.40
Sharon,Pa. S3 .....7.50
S.Chicago,Ill. U5, W14..7.50
SparrowsPoint,Md. B2...7.50
Youngstown Y1 .....7.50

FLOOR PLATES
Cleveland J5 .....6.375
Consnohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ..6.375
Munhall,Pa. U5 .....6.375
Pittsburgh J5 .....6.375
S.Chicago,Ill. U5 ....6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.55
Ashland l.c.l.(15) A10 ..6.05
Cleveland c.l. R2 .....6.05
Warren,O. c.l. R2 ....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.675
Aliquippa,Pa. (9) J5 ..5.675
Alton,Ill. L1 .....5.875
Atlanta(9) A11 .....5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ..5.675
Buffalo(9) R2 .....5.675
Canton,O.(23) R2 .....6.15
Clairton,Pa.(9) U5 ....5.675
Cleveland(9) R2 .....5.675
Ecorse,Mich(9) G5 ....5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala.(9) T2 ..5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1 ..6.375
Gary,Ind.(9) U5 .....5.675
Houston(9) S5 .....5.925
Ind.Harbor(9) I-2, Y1.5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
LosAngeles(9) B3 .....6.375
Massillon,O.(23) R2 ....6.15
Midland,Pa.(23) C18 ..6.025
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 .....6.375
N.T'wan'a,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 ..6.025
Pittsburg,Calif.(9) C11.6.375
Pittsburgh(9) J5 .....5.675
Portland,Oreg. O4 ....6.425
Riverdale,Ill.(9) A1 ..5.675
Seattle B3, N14 .....6.425
S.Ch'c'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5..5.675
S.SanFran.,Calif.(9) B3 6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ...5.775
Struthers,O.(9) Y1 ....5.675
Tonawanda,N.Y. B12 ..5.675
Torrance,Calif.(9) C11.6.375
Warren,O. C17 .....6.025
Youngstown(9) R2, U5.5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.725
Bethlehem,Pa. B2 ....6.725
Bridgeport,Conn. C32 ..6.80
Buffalo R2 .....6.725
Canton,O. R2, T7 ....6.725
Clairton,Pa. U5 .....6.725
Detroit S41 .....6.725
Economy,Pa. B14 .....6.725
Ecorse,Mich. G5 .....6.725
Fairless,Pa. U5 .....6.875
Farrell,Pa. S3 .....6.725
Fontana,Calif. K1 ....7.775
Gary,Ind. U5 .....6.725
Houston S5 .....6.975
Ind.Harbor,Ind. I-2, Y1.6.725
Johnstown,Pa. B2 .....6.725
KansasCity,Mo. S5 ....6.975
Lackawanna,N.Y. B2..6.725
LosAngeles B3 .....7.775
Lowellville,O. S3 .....6.725
Massillon,O. R2 .....6.725
Midland,Pa. C18 .....6.725
Owensboro,Ky. G8 ....6.725
Pittsburgh J5 .....6.725
Sharon,Pa. S3 .....6.725
S.Chicago R2, U5, W14 6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 .....6.725
Warren,O. C17 .....6.725
Youngstown U5 .....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 .....8.30
Bessemer,Ala. T2 .....8.30
Bethlehem,Pa. B2 .....8.30
Clairton,Pa. U5 .....8.30
Cleveland R2 .....8.30
Ecorse,Mich. G5 .....8.30
Fairfield,Ala. T2 .....8.30
Fontana,Calif. K1 .....9.00
Gary,Ind. U5 .....8.30
Houston S5 .....8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 .....8.30
KansasCity,Mo. S5 ....8.55
Lackawanna,N.Y. B2 ..8.30
LosAngeles B3 .....9.00
Pittsburgh J5 .....8.30
Seattle B3 .....9.05
S.Chicago,Ill. R2, W14..8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 ....9.05
Struthers,O. Y1 .....8.30
Youngstown U5 .....8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 .....5.925
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 .....5.775
Sterling,Ill.(1) N15 ..5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa J5 .....5.675
Atlanta A11 .....5.875
Joliet,Ill. P22 .....5.675
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 .....6.375
Pittsburgh J5 .....6.025
Portland,Oreg. O4 ....6.425
SanFrancisco B3 .....6.52
Seattle B3 .....6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....7.05
KansasCity,Mo. S5 ....7.05
Pittsburgh J5 .....6.80
Youngstown U5 .....6.80

BARS, C.F. Leaded (Including leaded extra)
Carbon
LosAngeles P2, S30 ..11.75*
Alloy
Ambridge,Pa. W18 ..10.175
BeaverFalls,Pa. M12 ..10.175
Camden,N.J P13 ....10.35
Chicago W18 .....10.175
Elyria,O. W8 .....10.175
Monaca,Pa. S17 .....10.175
Newark,N.J. W18 ....10.35
SpringCity,Pa. K3 ....10.35

*Grade A; add 0.05¢ for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....7.65
BeaverFalls,Pa. M12,R2.7.65
Birmingham C15 .....8.25
Buffalo B5 .....7.70
Camden,N.J. P13 .....8.10
Carnegie,Pa. C12 .....7.65
Chicago W18 .....7.65
Cleveland A7, C20 ....7.65
Detroit B5, P17 .....7.85
Detroit S41 .....7.65
Donora,Pa. A7 .....7.65
Elyria,O. W8 .....7.65
FranklinPark,Ill. N5 ....7.65
Gary,Ind. R2 .....7.65
GreenBay,Wis. F7 .....7.65
Hammond,Ind. J5, L2 ..7.65
Hartford,Conn. R2 .....8.15
Harvey,Ill. B5 .....7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2.9.10
Mansfield,Mass. B2 ....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 .....7.65
Monaca,Pa. S17 .....7.65
Newark,N.J. W18 .....8.10
NewCastle,Pa.(17) B4 ..7.65
Pittsburgh J5 .....7.65
Plymouth,Mich. P5 ....7.90
Putnam,Conn. W18 ....8.20
Readville,Mass. C14 ....8.20
S.Chicago,Ill. W14 ....7.65
SpringCity,Pa. K3 .....8.10
Struthers,O. Y1 .....7.65
Warren,O. C17 .....7.65
Waukegan,Ill. A7 .....7.65
Willimantic,Conn. J5 ...8.15
Youngstown F3, Y1 ....7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland Md. (5) C19.6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....9.025
BeaverFalls,Pa. M12,R2 9.025
Bethlehem,Pa. B2 .....9.025
Bridgeport,Conn. C32 ..9.175
Buffalo B5 .....9.025
Camden,N.J. P13 .....9.20
Canton,O. T7 .....9.025
Carnegie,Pa. C12 .....9.025
Chicago W18 .....9.025
Cleveland A7, C20 ....9.025
Detroit B5, P17 .....9.225
Detroit S41 .....9.025
Donora,Pa. A7 .....9.025
Elyria,O. W8 .....9.025
FranklinPark,Ill. N5 ..9.025
Gary Ind. R2 .....9.025
GreenBay,Wis. F7 ....9.625
Hammond,Ind. J5, L2..9.025
Hartford,Conn. R2 ....9.325
Harvey,Ill. B5 .....9.025
Lackawanna,N.Y. B2 ..9.025
LosAngeles P2, S30 ...11.00
Mansfield,Mass. B5 ..9.325
Massillon,O. R2, R8 ...9.025
Midland,Pa. C18 .....9.025
Monaca,Pa. S17 .....9.025
Newark,N.J. W18 .....9.20
Plymouth,Mich. P5 ....9.225
S.Chicago,Ill. W14 ....9.025
SpringCity,Pa. K3 .....9.20
Struthers,O. Y1 .....9.025
Warren,O. C17 .....9.025
Waukegan,Ill. A7 .....9.025
Willimantic,Conn. J5 ..9.325
Worcester,Mass. A7 ..9.325
Youngstown F3, Y1 ...9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 ....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ..6.425
Fairfield Ala. T2 ....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 ....6.375
Ft.Worth,Tex(4)(26)T4 5.925
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor Ind. I-2, Y1 5.675
Johnstown Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ...5.925
Kokomo,Ind. C16 ....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.425
S.Chicago,Ill. R2, W14.5.675
S.Duquesne,Pa. U5 ...5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2 .5.675
Sterling,Ill.(1) N15 ...5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ...6.10
Torrance,Calif. C11 ...6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing, Billet (Fabricated: to Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ....7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ..7.60
Seattle B3, N14 .....7.95
SparrowsPt.,Md. B2 ...7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ..7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.90
Economy,Pa.(D.R.)B14 18.55
Economy(Staybolt)B14 19.00
McK.Rks.(S.R.) L5 ...14.50
McK.Rks.(D.R.) L5 ..19.80
McK.Rks.(Staybolt) L5 20.95

BARS, Rail Steel

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4) (44) I-2 5.675
ChicagoHts.(4) C2 ....5.675
Franklin Pa.(3) F5 ...5.575
Franklin,Pa.(4) F5 ...5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 ....5.575
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 ....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Lackawanna,N.Y. B2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ...5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ...5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ...5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ...5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 ....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 .....6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 ....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 ....8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Niles,O. S3 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14 7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ...7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ...5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 .....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ...7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 ....6.275
SparrowsPoint,Md. B2..6.275
Steubenville,O. W10 ...6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 ....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2, Y1 9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
SparrowsPt. B2	7.225	....
Pittsburgh J5	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 ....6.875†
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield Ala. T2 ....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ...6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry O. W10 .6.875*
Middletown,O. A10 ...6.875†
Pittsburg Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ...6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.125
Pittsburgh J5 .....10.125
SparrowsPt.(39) B2 ..10.025

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Weirton,W.Va. W6 ....7.80
Youngstown J5 .....7.80

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2, Y1 6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 .....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Follansbee,W.Va. F4 ...8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield,O. E6 .....8.70
Warren O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ...7.225
Niles,O. M21, S3 ....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co., Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Steel Corp., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodnev Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
S43 Seymour Mfg. Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
U11 Union Carbide Metals Co.
U13 Union Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Corp.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala City,Ala.(27) R2 ...5.10
Allenport,Pa. P7 .....5.10
Alton,Ill. L1 .....5.30
Ashland Ky.(8) A10 .....5.10
Atlanta A11 .....5.10
Bessemer,Ala. T2 .....5.10
Birmingham C15 .....5.10
Buffalo(27) R2 .....5.10
Conshohocken,Pa. A3 ...5.15
Detroit M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Ind.Harbor,Ind. I-2 Y1.5.10
Johnstown,Pa.(25) B2 ..5.10
Lackaw'na,N.Y.(25) B2.5.10
LosAngeles(25) B3 ....5.85
LosAngeles C1 .....8.60
Minnequa,Colo. C10 ....6 20
Riverdale,Ill. A1 .....5.10
SanFrancisco S7 .....6.60
Seattle (25) B3 .....6.10
Seattle N14 .....6.60
Sharon,Pa. S3 .....5.10
S.Chicago W14 .....5.10
S.SanFrancisco(25) B3..5.85
SparrowsPoint Md. B2 ..5.10
Torrance,Calif. C11 ....5.85
Warren O. R2 .....5.10
Weirton W Va. W6 ....5.10
Youngstown U5 .....5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18 .....8.40
Farrell,Pa. S3 .....8.40
Gary,Ind U5 .....8.40
Houston S5 .....8.65
Ind Harbor,Ind. Y1 ....8.40
KansasCity Mo. S5 ....8.65
LosAngeles B3 .....9.60
Lowellville,O S3 .....8.40
Newport,Ky A2 .....8.40
Sharon,Pa. A2 S3 ....8.40
S.Chicago,Ill. W14 ....8.40
Youngstown U5, Y1 ....8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland Ky A10 .....7.575
Bessemer,Ala. T2 ....7.575
Conshohocken,Pa. A3 ..7.575
Ecorse Mich. G5 .....7.575
Fairfield,Ala. T2 .....7.575
Farrell Pa. S3 .....7.575
Gary,Ind. U5 .....7.575
Ind.Harbor,Ind. I-2 Y1.7.575
Lackawanna,N.Y. B2 ..7.575
LosAngeles(25) B3 ....8.325
Seattle(25) B3 .....8.575
Sharon,Pa. S3 .....7.575
S.Chicago,Ill. W14 ....7.575
S.SanFrancisco(25) B3.8.325
SparrowsPoint,Md. B2..7.575
Warren O. R2 .....7.575
Weirton,W.Va. W6 ....7.575
Youngstown U5, Y1 ..7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ....5.35
Warren,O. R2 .....5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 ....7.425
Baltimore T6 .....7.425
Boston T6 .....7.975
Buffalo S40 .....7.425
Cleveland A7 J5 .....7.425
Dearborn,Mich. S3 ....7.425
Detroit D2 M1 P20 ..7.425
Dover,O. G6 .....7.425
Evanston,Ill. M22 ....7.525
Farrell,Pa. S3 .....7.425
Follansbee,W.Va. F4 ..7.425
Fontana,Calif. K1 ....9.20
FranklinPark,Ill. T6 ..7.525
Ind.Harbor,Ind. Y1 ....7.425
Indianapolis S11 .....7.575
LosAngeles C1 S11 ....9.30
McKeesport,Pa. E10 ...7.525
NewBedford,Mass. R10 7.875
NewBritain,Conn. S15..7.875
NewCastle,Pa. B4, E5..7.425
NewHaven,Conn. D2 ..7.875
NewKensington,Pa. A6 7.425
Pawtucket,R.I. F3 ....7.975
Pawtucket,R.I. N8 ....7.975
Philadelphia P24 .....7.875
Pittsburgh J5 .....7.425
Riverdale,Ill. A1 .....7.525
Rome,N.Y.(32) R6 ....7.425
Sharon,Pa. S3 .....7.425
Trenton,N.J.(31) R5 ..8.875
Wallingford,Conn. W2..7.875
Warren O. R2, T5 ....7.425
Worcester,Mass. A7 ..7.975
Youngstown S41, Y1 ..7.425

STRIP, Cold-Rolled Alloy

Boston T6 .....15.90
Carnegie,Pa. S18 .....15.55
Cleveland A7 .....15.55
Dover,O. G6 .....15.55
Farrell,Pa. S3 .....15.55
FranklinPark,Ill. T6 ..15.55
Harrison,N.J. C18 ....15.55
Indianapolis S41 .....15.70
LosAngeles S41 .....17.75
Lowellville,O. S3 .....15.55
Pawtucket,R.I. N8 ....15.90
Riverdale,Ill. A1 .....15.55
Sharon,Pa. S3 .....15.55
Worcester,Mass.A7 ....15.85
Youngstown S41 .....15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 .....10.80
Dearborn,Mich. S3 ....10.80
Dover,O. G6 .....10.80
Farrell,Pa. S3 .....10.80
Ind.Harbor,Ind. Y1 ....10.80
Sharon,Pa. S3 .....10.80
Warren,O. R2 .....10.80

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie, Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis S41	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	9.85	10.40	12.60	15.60	....
New York W3	....	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	**9.50**	**10.70**	**12.90**	**15.90**	**18.85**
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton N.J. R5	...	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol Conn. W1	18.85	22.95	27.80
Buffalo W12	18.85	....	....
Fostoria,O S1	19.05	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.85	22.95	27.80
New York W3	18.85	22.95	27.80
Palmer Mass W12	18.85	....	....
Trenton N.J R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown S41	19.20	23.30	28.15

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa Pa. J5	$9.10	$9.35	$9.75
Fairfield,Ala. T2	9.20	9.45	9.85
Fairless Pa. U5	9.20	9.45	9.85
Fontana,Calif. K1	9.75	10.00	10.40
Gary,Ind. U5	9.10	9.35	9.75
GraniteCity,Ill. G4	9.20	9.45	9.60
IndianaHarbor,Ind. I-2, Y1	9.10	9.35	9.75
Irvin,Pa. U5	9.10	9.35	9.75
Niles,O. R2	9.10	9.35	9.75
Pittsburg,Calif. C11	9.75	10.00	10.40
SparrowsPoint Md. b2	9.10	9.35	9.75
Weirton,W.Va. W6	9.10	9.35	9.75
Yorkville,O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (Dollars per 100 lb)			
Aliquippa,Pa. J5 (21-27 Ga.)	7.90	8.10	....
Niles,O. R2 (20-27 Ga.)	7.90	8.10	8.30

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.40	$10.65
Fairfield,Ala. T2	10.50	10.75
Fairless Pa. U5	10.50	10.75
Fontana,Calif K1	11.05	11.30
Gary,Ind. U5	10.40	10.65
Ind.Harb. Y1	10.40	10.65
Pitts.Calif. C11	11.05	11.30
Sp.Pt.Md. B2	10.40	10.65
Weirton,W.Va W6	10.40	10.65
Yorkville,O. W10	10.40	10.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$8.20
Fairfield,Ala. T2 .....8.30
Fairless Pa. U5 .....8.30
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....8.20
GraniteCity,Ill. G4 .....8.30
Ind.Harbor,Ind. I-2, Y1.8.20
Irvin Pa. U5 .....8.20
Niles O R2 .....8.20
Pittsburg,Calif. C11 ...8.85
SparrowsPoint,Md. B2 ..8.25
Weirton W Va. W6 ....8.20
Yorkville,O. W10 .....8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5 .....7.85
Gary,Ind. U5 .....7.85
GraniteCity,Ill. G4 .....7.95
Ind Harbor Ind. Y1 ....7.85
Irvin,Pa. U5 .....7.85
Yorkville,O. W10 .....7.85

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5 .....$10.05
Irvin,Pa. U5 .....10.05
Weirton, W.Va. W6 ....10.80
Youngstown Y1 .....10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....8.175

STRIP, C.R. Electrogalvanized

Cleveland A7 .....7.425*
Dover,O. G6 .....7.425*
Evanston,Ill. M22 ....7.525*
McKeesport,Pa. E10 ...7.50*
Riverdale,Ill. A1 ....7.525*
Warren O. B9, S3, T5.7.425*
Worcester,Mass. A7 ..7.975
Youngstown S41 .....7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3 .....7.50
Sharon,Pa. S3 .....7.50

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.65
Farrell Pa. S3 .....5.525
Riverdale,Ill. A1 ....5.675
Sharon,Pa. S3 .....5.525
Youngstown U5 .....5.525

STRIP, Galvanized (Hot-Dipped)

Ashland,Ky.(8) A10 ....5.35
Atlanta A11 .....5.10
Bessemer,Ala. T2 .....5.10
Birmingham C15 .....5.10
Buffalo(27) R2 .....5.10
Conshohocken,Pa. A3 ...5.15
Detroit M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Ind.Harbor,Ind. I-2 Y1.5.10
Johnstown,Pa.(25) B2 ..5.10
Lackaw'na,N.Y.(25) B2.5.10
LosAngeles(25) B3 ....5.85
LosAngeles C1 .....8.60
Minnequa,Colo. C10 ....6 20
Riverdale,Ill. A1 .....5.10
SanFrancisco S7 .....6.60
Seattle (25) B3 .....6.10
Seattle N14 .....6.60
Sharon,Pa. S3 .....5.10
S.Chicago W14 .....5.10
S.SanFrancisco(25) B3..5.85
SparrowsPoint Md. B2 ..5.10
Torrance,Calif. C11 ....5.85
Warren O. R2 .....5.10
Weirton W Va. W6 ....5.10
Youngstown U5 .....5.10

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10
Warren,O. R2 (Silicon Lowcore)	8.10

SHEETS (22 Ga., coils & cut lengths)	T-72	T-65	T-58	T-52
Fully Processed (Semiprocessed ½c lower)				
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.10	19 70	20 20	20 70	15.70††
Butler Pa. A10	....	....	19 70	20 20	20 70	....
Vandergrift Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed, †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..8.00
Aliquippa,Pa. J5 .....8.00
Alton,Ill. L1 .....8.20
Atlanta A1 .....8.00
Bartonville,Ill. K4 .....8.10
Buffalo W12 .....8.00
Chicago W13 .....8.00
Cleveland A7, C20 .....8.00
Crawfordsville,Ind. M8 ..8.10
Donora,Pa. A7 .....8.00
Duluth A7 .....8.00
Fairfield,Ala. T2 .....8.00
Fostoria,O.(24) S1 ....8.10
Houston S5 .....8.25
Jacksonville Fla. M8 ..8.35
Johnstown Pa. B2 .....8.00
Joliet,Ill A7 .....8.00
KansasCity,Mo. S5 ....8.25
Kokomo Ind. C16 .....8.10
LosAngeles B3 .....8.95
Minnequa,Colo. C10 ....8.25
Monessen,Pa. P7, P16..8.00
N.Tonawanda,N.Y. B11..8.00
Palmer,Mass. W12 .....8.30
Pittsburg Calif. C11 ....8.95
Portsmouth,O. P12 ....8.00
Rankin,Pa. A7 .....8.00
S.Chicago,Ill. R2 .....8.00
S.SanFrancisco C10 ....8.95
SparrowsPoint,Md. B2 ..8.10
Sterling,Ill.(1) N15 ....8.00
Sterling,Ill. N15 .....8.10
Struthers,O. Y1 .....8.00
Waukegan Ill. A7 .....8.00
Worcester Mass. A7 ....8.30

WIRE, Cold Heading Carbon

Elyria,O. W8 .....8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4 ....12.65
Buffalo W12 .....13.40
Cleveland A7 .....12.65
Donora,Pa. A7 .....12.65
Duluth A7 .....12.65
Johnstown,Pa. B2 ....13.40
Minnequa,Colo. C10 ..12.775
Monessen,Pa. P7, P16..12.65
Muncie Ind. I-7 .....13.60
NewHaven,Conn. A7 ..12.95
Palmer,Mass. W12 ....13.70
Pittsburg Calif. C11....13.45
Portsmouth O. P12 ....12.65
Roebling,N.J. R5 .....12.95
SparrowsPt.,Md. B2 ...13.50
Struthers,O. Y1 .....13.40
Trenton,N.J. A7 .....12.95
Waukegan,Ill. A7 .....12.65
Worcester,Mass. A7 ....12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....9.75
Alton,Ill. L1 .....9.95
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora,Pa. A7 .....9.75
Duluth A7 .....9.75
Johnstown,Pa. B2 .....9.75
KansasCity Mo. S5 ....10.00
LosAngeles B3 .....10.70
Minnequa,Colo. C10 ....9.95
Monessen,Pa. P7, P16 ..9.75
NewHaven Conn. A7 ..10.05
Palmer,Mass. W2 ....10.05
Pittsburg,Calif. C11 ...10.70
Portsmouth,O. P12 ....9.75
Roebling,N.J. R5 ....10.05
S.Chicago,Ill. R2 .....9.75
S.SanFrancisco C10 ...10.70
SparrowsPt.,Md. B2 ....9.85
Struthers,O. Y1 .....9.75
Trenton N.J. A7 .....10.05
Waukegan Ill. A7 .....9.75
Worcester,Mass. A7 ....10.05

WIRE, MB Spring, High-Carbon

Aliquippa Pa. J5 .....9.75
Alton,Ill. L1 .....9.95
Bartonville Ill. K4 .....9.85
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora,Pa. A7 .....9.75
Duluth A7 .....9.75
Fostoria,O. S1 .....9.80
Johnstown Pa. B2 .....9.75
KansasCity,Mo. S5 ....10.00
LosAngeles B3 .....10.70
Milbury,Mass.(12) N6 .10.05
Minnequa,Colo. C10 ... 9.95
Monessen,Pa. P7 P16..9.75
Muncie,Ind. I-7 .....9.95
Palmer,Mass. W12 ....10.05
Pittsburg,Calif C11 ....10.70
Portsmouth O P12 ....9.75
Roebling N.J. R5 ....10.05
S.Chicago, Ill R2 .....9.75
S.SanFrancisco C10 ...10.70
SparrowsPt. Md B2 ....9.85
Struthers,O. Y1 .....9.75
Trenton N.J. A7 .....10.05
Waukegan,Ill. A7 .....9.75
Worcester,Mass.A7,J4,T6 10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 .....16.50
Bartonville Ill. K4 ....16.40
Chicago W13 .....16.30
Cleveland A7 .....16.30
Crawfordsville,Ind. M8.16.40
Fostoria,O. S1 .....16.30
Houston S5 .....16.55
Jacksonville Fla. M8 ..16.65
Johnstown,Pa. B2 ....16.30
KansasCity,Mo. S5 ....16.55
Kokomo,Ind. C16 .....16.30
Minnequa,Colo. C10 ....16.55
Monessen Pa. P16 .....16.30
Muncie,Ind. I-7 .....16.50
Palmer,Mass. W12 ....16.60
S.SanFrancisco C10 ...17.15
Waukegan,Ill. A7 .....16.30
Worcester,Mass. A7, J6.16.60

WIRE, Tire Bead

Bartonville,Ill. K4 ....17.15
Monessen,Pa. P16 .....17.15
Roebling,N.J. R5 .....17.65

ROPE WIRE (A)

Bartonville,Ill. K4 ....13.45
Buffalo W12 .....13.45
Fostoria,O. S1 .....13.45
Johnstown Pa. B2 .....13.45
Monessen,Pa. P7 .....13.45
Muncie,Ind. I-7 .....13.65
Palmer,Mass. W12 ....13.75
Portsmouth,O. P12 ....13.45
Roebling,N.J. R5 .....13.75
St. Louis L8 .....13.45
SparrowsPt.,Md. B2 ....13.55
Struthers,O. Y1 .....13.45
Worcester,Mass. J4 ....13.75
(A) Plow and Mild Plow; add 0.25c for Improved Plow.

56-inch semi-continuous hot strip mill for rolling silicon, high alloy, carbon and stainless steels at Armco Steel Corporation's Butler, Pennsylvania, works.

BLAW-KNOX HOT STRIP MILLS

Blaw-Knox designs and builds a full range of continuous, semi-continuous and single stand reversing hot strip mills. Other Blaw-Knox equipment for the metals industry includes complete rolling mill installations including all auxiliary equipment for ferrous and non-ferrous metals, iron, alloy iron, and steel rolls, Blaw-Knox Medart cold finishing equipment, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.

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BLAW-KNOX COMPANY

Foundry & Mill Machinery Division

Blaw-Knox Building • 300 Sixth Avenue

Pittsburgh 22, Pennsylvania

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Just produced by Handy & Harman—this new Refining Bulletin describes the great cash potential in precious metals industrial waste... lists many possible sources. Types and forms of refinings are illustrated photographically and described in text. Equally important, the bulletin calls attention to the fact that much of industry's valuable waste is truly wasted.

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82 Fulton Street

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141 John Street

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General Offices: 82 Fulton St., New York 38, N.Y.

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	....12.35
Baltimore T6	.....12.65
Boston T6	.....12.65
Buffalo W12	.....12.35
Chicago W13	.....12.45
Cleveland A7	.....12.35
Crawfordsville,Ind. M8	.12.35
Dover,O. G6	.....12.35
Farrell,Pa. S3	.....11.65
Fostoria,O. S1	.....12.35
FranklinPark,Ill. T6	..12.45
Kokomo,Ind. C16	....12.35
Massillon,O. R8	.....12.35
Milwaukee C23	.....12.55
Monessen,Pa. P7, P16	..12.35
Palmer,Mass. W12	....12.65
Pawtucket,R.I. N8	....11.95
Philadelphia P24	.....12.65
Riverdale,Ill. A1	.....12.45
Rome,N.Y. R6	.....12.35
Sharon,Pa. S3	.....12.35
Trenton,N.J. R5	.....12.65
Warren,O. B9	.....12.35
Worcester,Mass. A7,T6	.12.65

NAILS, Stock **Col.**

AlabamaCity,Ala. R2	...173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	..175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburgh,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7 ....$10.30

NAILS, Cut (100 lb keg)
To Dealers (33)

Wheeling,W.Va. W10 ..$9.80

POLISHED STAPLES **Col.**

AlabamaCity,Ala. R2	...175
Aliquippa,Pa. J5	173
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	..177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2	..$9.24
Atlanta A11	.....10.36
Bartonville,Ill. K4	....10.36
Buffalo W12	.....10.26
Chicago W13	.....9.24
Crawfordsville,Ind. M8	..9.34
Donora,Pa. A7	.....9.24
Duluth, A7	.....9.24
Fairfield,Ala. T2	.....9.24
Houston S5	.....10.51
Jacksonville,Fla. M8	...9.34
Johnstown,Pa. B2	....10.26
Joliet,Ill. A7	.....9.24
KansasCity,Mo. S5	....10.51
Kokomo,Ind. C16	.....9.34
LosAngeles B3	.....11.05
Minnequa,Colo. C10	....10.51
Pittsburg,Calif. C11	....9.94
S.Chicago,Ill. R2	.....9.24
S.SanFrancisco C10	...11.04
SparrowsPt.,Md. B2	...10.36
Sterling,Ill. (37) N15	..9.24

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	..$9.54
Atlanta A11	.....10.70
Bartonville,Ill. K4	....10.70
Buffalo W12	.....10.60
Chicago W13	.....9.54
Crawfordsville,Ind. M8	..9.64
Donora,Pa. A7	.....9.54
Duluth A7	.....9.54
Fairfield,Ala. T2	.....9.54
Houston S5	.....10.85
Jacksonville,Fla. M8	....9.64
Johnstown,Pa. B2	....10.60
Joliet,Ill. A7	.....9.54
KansasCity,Mo. S5	....10.85
Kokomo,Ind. C16	.....9.64
LosAngeles B3	.....11.40
Minnequa,Colo. C10	...10.85
Pittsburg,Calif. C11	...10.26
S.Chicago,Ill. R2	.....9.54
S.SanFrancisco C10	...11.40
SparrowsPt.,Md. B2	...10.70
Sterling,Ill. (37) N15	....9.54

Coil No. 6500 Interim

AlabamaCity,Ala. R2	..$9.59
Atlanta A11	.....10.75
Bartonville,Ill. K4	....10.75
Buffalo W12	.....10.65
Chicago W13	.....9.59
Crawfordsville,Ind. M8	..9.69
Donora,Pa. A7	.....9.59
Duluth A7	.....9.59
Fairfield,Ala. T2	.....9.59
Houston S5	.....10.90
Jacksonville,Fla. M8	....9.69
Johnstown,Pa. B2	....10.65
Joliet,Ill. A7	.....9.59
KansasCity,Mo. S5	....10.90
Kokomo,Ind. C16	.....9.69
LosAngeles B3	.....11.45
Minnequa,Colo. C10	...10.90
Pittsburg,Calif. C11	...10.31
S.Chicago,Ill. R2	.....9.59
S.SanFrancisco C10	....11.45
SparrowsPt.,Md. B2	...10.75
Sterling,Ill. (37) N15	....9.59

BALE TIES, Single Loop **Col.**

AlabamaCity,Ala. R2	...212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	..214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill. (7) N15	214

FENCE POSTS

Birmingham C15	177
ChicagoHts.,Ill. C2, I-2	..177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Tonawanda,N.Y. B12	...177

WIRE, Barbed **Col.**

AlabamaCity,Ala. R2	.193**
Aliquippa,Pa. J5	.....190‖
Atlanta A11	.....198‖
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	.198
Donora,Pa. A7	.....193†
Duluth A7	.....193†
Fairfield,Ala. T2	.....193†
Houston S5	.....198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	....196‖
Joliet,Ill. A7	.....193†
KansasCity,Mo. S5	....198**
Kokomo,Ind. C16	.....195†
Minnequa,Colo. C10	....198**
Monessen,Pa. P7	.....196‖
Pittsburg,Calif. C11	....213†
Rankin,Pa. A7	.....193†
S.Chicago,Ill. R2	.....193**
S.SanFrancisco C10	....213*
SparrowsPoint,Md. B2	..198‖
Sterling,Ill. (7) N15	...198††

WOVEN FENCE, 9-15 Ga. Col.

Ala.City,Ala. R2	....187**
Aliq'ppa,Pa.9-11½Ga.J5	190‖
Atlanta A11	.....192‖
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	..192
Donora,Pa. A7	.....187†
Duluth A7	.....187†
Fairfield,Ala. T2	.....187†
Houston S5	.....192**
Jacksonville,Fla. M8	...192
Johnstown,Pa.(43) B2	..190‖
Joliet,Ill. A7	.....187†
KansasCity,Mo. S5	....192**
Kokomo,Ind. C16	.....189†
Minnequa,Colo. C10	....192**
Pittsburg,Calif. C11	....210†
Rankin,Pa. A7	.....187†
S.Chicago,Ill. R2	.....187**
Sterling,Ill.(7) N15	...192††

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.85	19.40**
Aliq'ppa,Pa. J5	17.85	19.65
Bartonville K4	17.95	19.75
Cleveland A7	17.85	....
Craw'dville M8	17.95	19.80‡‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	17.95	19.80‡‡
Johnstown B2	17.85	19.65‖
Kan.City,Mo. S5	18.10	....
Kokomo C16	17.25	18.80†
Minnequa C10	18.10	19.65**
P'lm'r,Mass.W12	18.15	19.70†
Pitts.,Calif. C11	18.20	19.75†
S.SanFran. C10	18.20	19.75**
Sterling(37)N15	17.25	19.05††
SparrowsPt. B2	17.95	19.75‖
Waukegan A7	17.85	19.40†
Worcester A7	18.15	....

WIRE, Merchant Quality (6 to 8 gage)	An'ld	Galv.
Ala.City,Ala. R2	9.00	9.55**
Aliquippa J5	8.65	9.325‖
Atlanta(48) A11	9.10	9.775‖
Bartonville(48) K4	9.10	9.775
Buffalo W12	9.00	9.55†
Cleveland A7	9.00	....
Crawfordsville M8	9.10	9.80‡‡
Donora,Pa. A7	9.00	9.55†
Duluth A7	9.00	9.55†
Fairfield T2	9.00	9.55†
Houston(48) S5	9.25	9.80**
Jack'ville,Fla. M8	9.10	9.80‡‡
Johnstown B2(48)	9.00	9.675‖
Joliet,Ill. A7	9.00	9.55†
Kans.City(48) S5	9.25	9.80**
Kokomo(48) S16	9.10	9.65†
LosAngeles B3	9.95	10.625‖
Monessen(48) P7	8.65	9.35‖
Palmer,Mass. W12	9.30	9.85†
Pitts.,Calif. C11	9.95	10.50†
Rankin,Pa. A7	9.00	9.55†
S.Chicago R2	9.00	9.55**
S.SanFran. C10	9.95	10.50**
Spar'wsPt.(48)B2	9.10	9.775‖
St'ling(1)(48)N15	9.00	9.70‖‖
Struthers,O. Y1	9.00	9.65†
Worcester,Mass.A7	9.30	9.85†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. ‡‡11.00c. **Subject to zinc equalization extras. §§11.50c.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts

Full Size Body (cut thread)

½ in. and smaller:	
3 in. and shorter ..	55.0
3¼ in. thru 6 in. ..	50.0
Longer than 6 in. ..	37.0
⅝ in., 3 in. & shorter	47.0
¾ in. thru 6 in. ..	**40.0**
Longer than 6 in. ..	31.0
¾ in. thru 1 in.:	
6 in. and shorter ..	37.0
Longer than 6 in. ..	31.0
1¼ in. and larger:	
All lengths	31.0

Undersize Body (rolled thread)

½ in. and smaller:	
3 in. and shorter ...	55.0
3¼ in. thru 6 in. ..	50.0

Carriage Bolts

Full Size Body (cut thread) & Undersize Body (rolled thread)

½ in. and smaller:	
6 in. and shorter ..	48.0
Larger diameters and longer lengths ...	35.0

Lag, Plow, Tap, Blank, Step, Elevator, Tire, and Fitting Up Bolts

½ in. and smaller:	
6 in. and shorter ..	48.0
Larger diameters and longer lengths ...	35.0

High Tensile Structural Bolts

(Reg. semifinished hex head bolts, heavy semifinished hex nuts. Bolts — High-carbon steel, heat treated. Spec. ASTM A-325, in bulk. Full keg quantity)

⅝ in. diam.	50.0
¾ in. diam.	47.0
⅞ and 1 in. diam ..	43.0
1⅛ and 1¼ in. diam.	34.0

NUTS

(Keg or case quantity and over)

Square Nuts, Reg. & Heavy:

All sizes	56.0

(Full container)

Hex Nuts, Reg. & Heavy Hot Pressed & Cold Punched:

¾ in. and smaller..	62.0
⅞ in. to 1⅛ in., incl.	56.0
1⅛ in. and larger..	51.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller..	62.0
⅞ in. to 1⅛ in., incl.	56.0
1⅛ in. and larger..	51.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

⅞ in. and smaller..	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger..	51.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller..	62.0
¾ in. to ⅞ in., incl.	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger..	51.5

CAP AND SETSCREWS

(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Cap Screws, Coarse or Fine Thread, Bright:

6 in. and shorter:	
½ in. and smaller..	35.0
⅝, ¾, and 1 in. ..	16.0
Longer than 6 in.:	
½ in. and smaller..	3.0
⅝, ¾, and 1 in. ..	+11.0

High Carbon, Heat Treated:

6 in. and shorter:	
½ in. and smaller..	20.0
⅝, ¾, and 1 in. ..	+ 5.0
Longer than 6 in.:	
½ in. and smaller..	+19.0
⅝, ¾, and 1 in. ..	+39.0

Flat Head Cap Screws:

¾ in. and smaller, 6 in. and shorter ..	+85.0

Setscrews, Square Head, Cup Point, Coarse Thread:

Through 1 in. diam.:	
6 in. and shorter ..	+ 5.0
Longer than 6 in. ..	+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in.. larger 12.85

⅞ in. and smaller by 6 in. and shorter: 15.0%.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	27.24	23.13
1¼	13	....	32.25	24.41
1½	13	30.42	35.65	26.98
1¾	13	35.94	42.12	31.89
2	13	40.28	47.21	35.74
2¼	13	45.36	53.17	40.26
2¼	12	49.24	57.72	43.70
2½	12	54.23	63.57	48.13
2¾	12	58.73	68.83	52.13
3	12	62.62	73.40	55.59

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Standard All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.725
Johnston,Pa. B2	....	....	....(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.225
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	.....6.875
Gary,Ind. U5	.....6.875
Lackawanna,N.Y. B2	..6.875
Minnequa,Colo. C10	...6.875
Seattle B3	.....7.025
Steelton,Pa. B2	.....6.875
Torrance,Calif. C11	...6.875

JOINT BARS

Bessemer,Pa. U5	.....7.25
Fairfield,Ala. T2	.....7.25
Joliet,Ill. U5	.....7.25
Lackawanna,N.Y. B2	..7.25
Minnequa,Colo. C10	...7.25
Steelton,Pa. B2	.....7.25

AXLES

Ind.Harbor,Ind. S13	..9.125
Johnstown,Pa. B2	....9.125

TRACK BOLTS, Untreated

Cleveland R2	.....15.35
KansasCity,Mo. S5	...15.35
Lebanon,Pa. B2	.....15.35
Minnequa Colo. C10	...15.35
Pittsburgh P14	.....14.75
Seattle B3	.....15.85

SCREW SPIKES

Lebanon,Pa. B2 .....15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	.....9.75
Ind.Harbor,Ind. I-2,Y1	10.10
KansasCity,Mo. S5	....10.10
Lebanon,Pa. B2	.....10.10
Minnequa,Colo. C10	...10.10
Pittsburgh J5	.....10.10
Seattle B3	.....10.60
S.Chicago Ill. R2	.....10.10
Struthers,O. Y1	.....10.10
Youngstown R2	.....10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1½ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 3 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) 7/16" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.375c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 13 Ga. & lighter; 60" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.635c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25
Youngstown Y1	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

ELECTR'CWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+28.75	+5.75	+23.5	+3.25	+21	+1.75	+19.5	+1.75	+19.5	+2	+19.75	0.5	+17.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Alton, Ill. L1	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Benwood, W. Va. W10	1.5	+27	+10.5	+36	+21	+45.5	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Butler, Pa. F6	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+28	+7.75	+24	+4.25	+19.5	+1.75	+18.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+16	4.25	+12	7.75	+7.5	10.25	+7.75
Lorain, O. N3	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sharon, Pa. S4	4.5	+24	+8.5	+34	+19.5	+44	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Sparrows Pt., Md. B2	2.5	+28	+10.5	+37	+21.5	+46.5	0.25	+17	3.25	+13	6.75	+8.5	9.25	+7.25
Wheatland, Pa. W9	4.5	+24	+8.5	+34	+19.5	+44	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+15	5.25	+11	8.75	+6.5	11.25	+5.25

Size—Inches	1⅛		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Alton, Ill. L1	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Benwood, W. Va. W10	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Etna, Pa. N2	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Fairless, Pa. N3	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Fontana, Calif. K1	+1.25	+17.25	+0.75	+16.75	0.75	+16.5	0.75	+16.5	+9.75	+27.5	+9.75	+27.5
Indiana Harbor, Ind. Y1	10.75	+5.25	11.25	+4.75	12.75	+4.5	12.25	+4.5	2.25	+15.5	2.25	+15.5
Lorain, O. N3	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sharon, Pa. M6	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+6.25	10.25	+5.75	11.75	+5.5	11.75	+5.5	1.25	+16.5	1.25	+16.5
Wheatland, Pa. W9	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5
Youngstown R2, Y1	11.75	+4.25	12.25	+3.75	13.75	+3.5	13.75	+3.5	3.25	+14.5	3.25	+14.5

*Galvanized pipe discounts based on zinc priced at 11.50c, East St. Louis.

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.75	28.00	....	36.00	....	43.50	39.25	48.50	45.00
202	24.75	31.50	37.75	39.00	42.25	44.50	40.00	49.25	49.25
301	24.00	29.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50
302	26.25	32.75	39.50	40.50	44.25	46.75	42.25	52.00	52.00
302B	26.50	34.00	42.25	45.75	46.75	49.00	44.50	57.00	57.00
303	....	33.26	42.50	....	47.25	49.75	45.00	56.75	56.75
304	28.00	34.50	42.00	43.75	47.00	49.50	45.75	55.00	55.00
304L	....	....	49.75	51.50	54.75	57.25	53.50	62.75	62.75
305	29.50	38.25	44.00	47.50	47.00	49.50	46.25	58.75	58.75
308	32.00	39.75	49.00	50.25	54.75	57.75	55.25	63.00	63.00
309	41.25	51.25	60.00	64.50	66.25	69.50	66.00	80.50	80.50
310	51.50	63.75	81.00	84.25	89.75	94.50	87.75	96.75	96.75
314	....	....	80.50	....	89.75	94.50	87.75	....	104.25
316	41.25	51.25	64.50	68.50	71.75	75.75	71.75	80.75	80.75
316L	....	....	72.25	76.25	79.50	83.50	79.50	88.50	88.50
317	49.75	62.25	79.75	88.25	89.50	94.25	88.50	101.00	101.00
321	33.50	41.50	48.75	53.50	54.50	57.50	54.75	65.50	65.50
330	....	....	123.25	....	113.00	143.75	135.00	149.25	149.25
18-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25
403	....	....	29.25	....	33.25	35.00	30.00	40.25	40.25
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75
410	17.50	22.25	29.25	31.00	33.25	35.00	30.00	40.25	40.25
416	....	....	29.75	....	33.75	35.50	31.25	48.25	48.25
420	....	34.75	35.50	41.75	40.75	42.75	40.25	62.00	62.00
430	17.75	22.50	29.75	32.00	33.75	35.50	31.00	40.75	40.75
430F	....	....	30.50	....	34.25	36.00	31.75	51.75	51.75
431	....	29.75	39.25	....	43.50	46.00	41.00	56.00	56.00
446	....	....	40.75	59.00	46.00	48.25	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary, Allegheny Ludlum Steel Corp.; Washington Steel Corp. Seymour Mfg. Co.

Clad Steel

	Plates: 5%	Plates: Carbon Base 10%	15%	20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	63.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
*Copper**	$35.85	$42.50

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3, nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	W Hot Wk. (H-21)	1.425-1.44
Oil Hardening (O-1)	0.505	V-Cr Hot Work (H-13)	0.550
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.95	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward, Ala. W15	62.00*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N. Tonawanda, N.Y. T9	....	66.50	67.00	67.50
Tonawanda, N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester, N.Y., deld.	69.02	69.52	70.02	....
Syracuse, N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S. Chicago, Ill. R2	66.00	66.50	66.50	67.00
S. Chicago, Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon, Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron, Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50
Chester, Pa. P4	68.00	68.50	69.00	....
Swedeland, Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark, N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70 91	71.41	71.99
Troy, N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
Neville Island, Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKees Rocks, Pa., deld.	....	67.60	67.60	68.13
Lawrenceville, Homestead, Wilmerding, Monaca, Pa., deld.	....	68.26	68.26	68.79
Verona, Trafford, Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge, Pa., deld.	68.60	69.10	69.10	69.63
Midland, Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard, Ohio Y1	....	....	66.50	....
Sharpsville, Pa S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield, Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie, Pa. I-3	66.00	66.50	66.50	67.00
Everett, Mass. E1	67.50	68.00	68.50	....
Fontana, Calif. K1	75.00	75.50	....	....
Geneva, Utah C11	66.00	66.50	....	....
GraniteCity, Ill. G4	67.90	68 40	68.90	....
Ironton, Utah C11	66.00	66.50	....	....
Minnequa, Colo. C10	68.00	68.50	69.00	....
Rockwood, Tenn. T3	....	62.50‡	66.50	....
Toledo, Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.01-6.50% silicon; add 75c for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson, Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14 01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

Calvert City, Ky. P15	$99.00
Niagara Falls, N.Y. P15	99.00
Keokuk, Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk, Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles, Tenn. T3 (Phos. 0.035% max)	$73.00
Rockwood, Tenn. T3 (Phos. 0.035% max)	73.00
Troy, N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie, Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Neville Island, Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	10.13	....	8.91	9.39	13.24#	....	9.40	9.29	11.21
Baltimore	8.55	9.25	9.99	....	9.05	9.45	11.85#	15.48	9.55	9.00	10.50
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	9.00	8.89	10.90
Boston	9.31	10.40	11.97	53.50	9.73	10.11	13.39#	15.71	10.01	10.02	11.85
Buffalo	8.40	9.60	10.85	55.98	8.75	9.15	11.45#	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.50	53.00	8.51	8.99	9.15	15.05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.95	53.43	8.83	9.31	11.53#	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	11.30	52.33	8.63	9.10	11.25#	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	11.25	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.35	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.84	9.82	10.68	....	9.33	9.22	11.03
Los Angeles	8.70[3]	10.80[3]	12.15[3]	57.60	9.15	9.10[3]	12.95[3]	16.35	9.00[3]	9.10[3]	11.30[3]
Memphis, Tenn.	8.59	9.80	....	....	8.84	9.32	11.25#	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	11.04	....	8.65	9.13	9.39	15.19	9.22	9.08	10.34
Moline, Ill.	8.55	9.80	....	....	8.84	8.95	9.15	....	8.99	8.91	....
New York	9.17	10.49	11.10	53.08	9.64	9.99	13.25#	15.50	9.74	9.77	11.05
Norfolk, Va.	8.65	....	....	....	9.15	9.30	12.75	....	9.65	9.10	10.50
Philadelphia	8.20	9.25	10.61	52.71	9.25	9.40	11.95#	15.48	9.10	9.15	10.40**
Pittsburgh	8.35	9.55	10.90	52.00	8.61	8.99	11.25#	15.05	9.00	8.89	10.20
Richmond, Va.	8.65	....	10.79	....	9.15	9.55	....	....	9.65	9.10	10.60
St. Louis	8.63	9.83	11.28	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	11.49	....	8.84	9.21	9.86	....	9.38	9.30	10.49
San Francisco	9.65	11.10	11.40	55.10	9.75	10.15	13.00	16.00	9.85	10.00	12.35
Seattle	10.30	11.55	12.50	56.52	10.25	10.50	14.70	16.80[3]	10.20	10.10	12.50
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	10.35	11.55	12.55	57.38	10.80	11.05	14.70	16.80	10.25	10.15	13.05
Washington	9.15	....	....	....	9.65	10.05	12.50	....	10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [3]—30,000 lb; [5]—1000 to 4999 lb; [8]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000 pieces*)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga, Canon City, Colo., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $175.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $248.

Silica Brick (per 1000 pieces*)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., St. Louis, $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Canon City, Colo., $173; Lehi, Utah, $183; Los Angeles, $185.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $158; Morrisville, Hays, Latrobe, Pa., $163; E. Chicago, Ind., St. Louis, $168; Curtner, Calif., $185; Canon City, Colo., $183.

Semisilica Brick (per 1000 pieces*)

Woodbridge, N. J., Canon City, Colo., $140; Philadelphia, Clearfield, Pa., $145.

Ladle Brick (per 1000 pieces*)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000 pieces*)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Danville, Ill., $253; Philadelphia, $265; Clearfield, Pa., $230; Orviston, Snow Shoe, Pa.,$260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $310; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $325.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $350; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $365.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $188; Ottawa, Ill., $205.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead - burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

*—9 in. x 4½ x 2.50 sts.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, $30-$33, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $27.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	nom.

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	23.00
N. African hematite (spot)	nom.
Brazilian iron ore, 68.5%	22.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$10.75-11.00*
Domestic, concentrates f.o.b. milling points	16.00-17.00†

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian (export tax included) $0.915-$0.965 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$42.00-44.00
48% 2.8:1	38.00-40.00
48% no ratio	29.00-31.00

South African Transvaal

44% no ratio	19.75-21.00
48% no ratio	29.00-31.0*

Turkish

48% 3:1	51.00-55.00

Domestic

Rail nearest seller

18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content.

mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f seaboard

50-55%	$2 25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.25
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$30.35
Cincinnati, deld.	33.34
Buffalo, ovens	32.00
Detroit, ovens	32.00
Pontiac, Mich., deld.	33.95
Saginaw, Mich., deld.	35.53
Erie, Pa., ovens	32.00
Everett, Mass., ovens:	
New England, deld.	33.55*
Indianapolis, ovens	31.25
Ironton, Ohio, ovens	30.50
Cincinnati, deld.	33.54
Kearny, N. J., ovens	31.25
Milwaukee, ovens	32.00
Neville Island (Pittsburgh), Pa., ovens	30.75
Painesville, Ohio, ovens	32.00
Cleveland, deld.	34.19
Philadelphia, ovens	31.00
St. Louis, ovens	33.00
St. Paul, ovens	31.25
Chicago, deld.	34.73
Swedeland, Pa., ovens	31.00
Terre Haute, Ind., ovens	31.25

*Within $5.15 freight zone from works.

Coal Chemicals

(Representative prices)

Cents per gal., f.o.b. tank cars or tank trucks, plant.

Pure benzene	31.00
Xylene, industrial grade	29.00
Creosote	22.00
Naphthalene, 78 deg	5.00
Toluene, one deg (del. east of Rockies)	25.00

Cents per lb, f.o.b. tank cars or tank trucks, del.

Phenol, 90 per cent grade	15.50

Per net ton bulk, f.o.b. cars or trucks, plant

Ammonium sulfate, regular grade	$32.00

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: 98% Fe: F.o.b. Camden or Riverton, N. J., freight allowed east of Mississippi river, ocean bags, 23,000 lb and over	11.25
Sponge Iron, Domestic, 98% Fe: F.o.b. Riverton, N. J., freight allowed east of Mississippi River: 100 mesh, 100 lb bags	11.25
100 mesh, 100 lb pails	9.10‡
40 mesh, 100 lb bags	8.10
Electrolytic Iron, Melting stock, 99.87% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.75
(In contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00

	Cents
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh	
Aluminum: Atomized, 500-lb drum, freight allowed	
Carlots	38.50
Ton lots	40.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	33.50-49.60†
Bronze, 5000-lb lots	50.50-54.60†
Copper: Electrolytic	14.25*
Reduced	14.25*
Lead	7.50*
Manganese, Electrolytic: Minus 50 mesh	43.00
Nickel	80.60
Nickel-Silver, 5000-lb lots	51.60-56.00†
Phosphor-Copper, 5000-lb lots	62.80
Copper (atomized) 5000-lb lots	43.30-51.80†
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.00*
Zinc, 5000-lb lots	19.00-32.20‡
Tungsten:	Dollars
Carbon reduced, 98.8% min, minus 65 mesh	nom.**
1000 lb	2.80
less 1000 lb	2.95
Chromium, electrolytic 99.8% Cr. min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §Cutting and scarfing grade. **Depending on price of ore.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$64.00
2½	30	41.50
3	40	39.25
4	40	37.00
5⅛	40	36.50
6	60	33.25
7	60	29.75
8, 9, 10	60	29.50
12	72	28.25
14	60	28.25
16	72	27.25
17	60	27.25
18	72	27.00
20	72	26.50
24	84	27.25

CARBON

8	60	14.25
10	60	13.80
12	60	14.75
14	60	14.75
14	72	12.55
17	60	12.65
17	72	12.10
20	90	11.55
24	72, 84	11.95
24	96	12.10
30	84	12.00
35, 40	110	11.60
40	100	12.50

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.40	$5.40	$5.30	$5.75
Bar Size Angles	5.10	5.10	5.00	5.43
Structural Angles	5.10	5.10	4.90	5.43
I-Beams	5.06	5.06	4.96	5.40
Channels	5.06	5.06	4.96	5.40
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	25.76	25.64	25.64	26.51
Barbed Wire (†)	6.60	6.60	6.60	6.95
Merchant Bars	5.40	5.40	5.35	5.90
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	5.19	5.32	5.14	5.49
Wire Rods, O.H. Cold Heading Quality No. 5	5.09	6.22	6.04	6.34
Bright Common Wire Nails (§)	7.89	7.75	7.67	8.26

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.006% max). Add 2.06c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn; packed, carload 26.8c, ton lot 28.4c, less ton 29.6c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, carload 45.75c, ton lot 47.25c, less ton lot. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, bulk, 33.25c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk, 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk, 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c, less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2" x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, 8M x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si, 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed, 2" x D plate (about ¼" thick) $1.15 per lb, ton lot $1.17, less ton lot $1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.6c per lb contained Si. Packed, c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices. **65% Ferrosilicon:** Contract, carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 24.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing min 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: 100 lb or more packed (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3½ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, in bags 20.70c; 3000 lb to c.l. pallets 20.80c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, bags 16c; 3000 lb to c.l., pallets 16c; 2000 lb to c.l., bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, bags 16.3c, 3000 lb to c.l., pallets 16.3c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2½ lb and containing 1 lb of Si). Contract, carload, bulk 8c per lb of briquet; packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c; 2000 lb to c.l.; bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.49 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb, f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lots $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ⅛-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

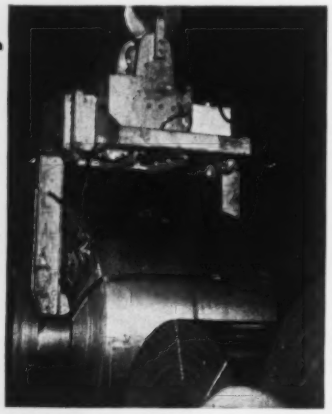
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.76 in all sizes except powdered which is $1.82.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.47; in bags, $1.46, f.o.b. Langeloth and Washington, Pa.



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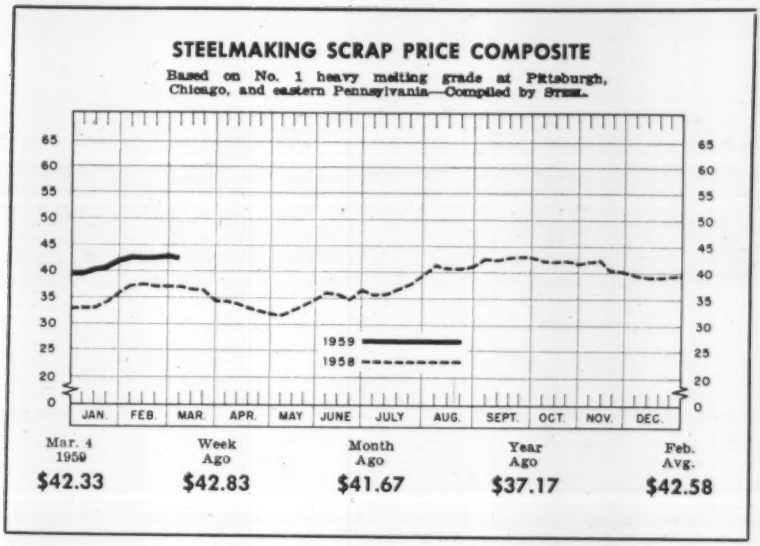


Scrap Reacts to Sluggish Demand

STEEL's composite on the prime grade declines 50 cents a ton to $42.33. Drop reflects lower bids on automotive lists at the end of February. Mill buying is limited

Scrap Prices, Page 118

Pittsburgh—Prices are weakening in spite of the district's 91 per cent steelmaking rate. Fisher Body Div.'s factory bundles brought $49.50 to $50.50 a ton (vs. $51.37 in February). Railroad scrap prices are off as much as $2 a ton. On Mar. 3, a major consumer bought scrap at these prices: No. 1 heavy melting, $44; No. 2 heavy melting, $37; No. 2 bundles, $31.

Chicago—Prices are off $1 to $2 a ton in a listless market. The decline started when brokers bought No. 1 factory bundles from auto body plants at $46-$46.50 delivered. This material is offered at end of each month and at the end of January had sold at $51 delivered. Since then a large district consumer has announced $44 a ton as its March price for No. 1 industrial heavy melting steel, a drop of $2 from February. All steelmaking grades are off proportionately, and even the foundry grades are $1 to $2 below recent sales.

Philadelphia — Scrap processors and dealers here say business is good. Prices are stable and no increase is expected.

New York — Brokers' buying prices are unchanged. Scrap is coming out more freely, but there is sufficient consumption to keep the market in balance. Trading is fairly brisk—both domestic and foreign—and market sentiment is strong.

Cleveland—The market is noticeably weaker despite the high level of steelmaking operations. That's because month end bids on automotive lists were lower than at the end of January. Considerable scrap is being generated, and steelmakers still show a preference for hot metal. So dealer material is hard to move.

Detroit—Auto lists closed lower, and most of the tonnage was taken by local firms. As a result, No. 1 grades averaged a $2-$3 drop. McLouth Steel and Ford Motor are staying out of the market because they hold heavy scrap inventories. Great Lakes Steel is reported to have bought a small tonnage of No. 2 bundles at $25, delivered.

The Canadian market is inactive.

The feeling among dealers and brokers is that the market can slip a few dollars more before the end of this month. Increasing tonnages generated by automakers may temporarily glut the market.

Foundry grades are holding up fairly well, although a sympathetic drop is showing up on some items. Selective grades are bringing upward of $50 a ton in limited tonnages. No change in this situation is expected this month.

Buffalo — Dealers expect March prices to ease a little because of weakness at other points and the heavy shipments taken by local mills during February. The foundries are not taking material as actively as the steel mills, but cast scrap prices are holding.

Cincinnati — Brokers' buying prices are off $1 a ton on the principal grades. Mill buying programs for March are modest because of their large inventories. No. 1 heavy melting is quoted $38.50-$39.50, off $1. Foundry demand for cast grades continues slow.

Houston—Brokers have not yet completed shipments on a limited order placed by the local steel mill. As a result, it's expected this steelmaker will delay entering the market with March orders.

Western Gulf exporters are moving slowly in filling Japanese orders. The outlook is for steady export activity the rest of this year. Japanese reports indicate that allocations for 1.7 million tons of U. S. scrap in the 1959 fiscal year will be announced in April. The tonnage, to be priced on the U. S. composite, would be twice 1958 imports from the U. S.

Birmingham — Most consumers are waiting to see if the drop in prices in the North will affect prices here. The current movement of tonnage is fair, but buying is limited. Open hearth steel consumers are on the sidelines, but a large electric furnace operator plans to enter the market early this month. Soil pipe manufacturers are buying more liberally at Anniston and Chattanooga, but local cast iron scrap prices are unchanged.

St. Louis—The market is weaker. Too much material is available. The mills are reducing inventories. As a result, all open hearth grades are down $1 a ton. Most railroad scrap is off $1 to $2, and a further decline is expected. The downtrend is expected to continue.

San Francisco — Supplies are ample for steel mills' current requirements and the trend of prices

(*Please turn to Page* 123)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, March 4, 1959. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Mar. 4	$42.33
Feb. 25	42.83
Feb. Avg.	42.58
Mar. 1958	35.83
Mar. 1954	24.37

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	44.00-45.00
No. 2 heavy melting	*36.00-37.00*
No. 1 dealer bundles	44.00-45.00
No. 2 bundles	*30.00-31.00*
No. 1 busheling	44.00-45.00
No. 1 factory bundles	*52.00-53.00*
Machine shop turnings	22.00-23.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings	26.00-27.00
Cast iron borings	26.00-27.00
Cut structurals:	
2 ft and under	51.00-52.00
3 ft lengths	50.00-51.00
Heavy turnings	36.00-37.00
Punchings & plate scrap	*52.00-53.00*
Electric furnace bundles	*52.00-53.00*

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	41.00-42.00
Unstripped motor blocks	31.00-32.00
Clean auto cast	39.00-40.00
Drop broken machinery	*51.00-52.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*47.00-48.00*
Rails, 2 ft and under	*58.00-59.00*
Rails, 18 in. and under	*59.00-60.00*
Random rails	*55.00-56.00*
Railroad specialties	*52.00-53.00*
Angles, splice bars	*52.00-53.00*
Rails, rerolling	61.00-62.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-230.00
18-8 turnings	120.00-125.00
430 bundles & solids	125.00-130.00
430 turnings	55.00-65.00

CHICAGO

No. 1 hvy melt., indus.	*43.00-44.00*
No. 1 hvy melt, dealer	*41.00-42.00*
No. 2 heavy melting	*35.00-36.00*
No. 1 factory bundles	*46.00-47.00*
No. 1 dealer bundles	*42.00-43.00*
No. 2 bundles	*28.00-29.00*
No. 1 busheling, indus.	*43.00-44.00*
No. 1 busheling, dealer	*41.00-42.00*
Machine shop turnings	*22.00-23.00*
Mixed borings, turnings	*24.00-25.00*
Short shovel turnings	*24.00-25.00*
Cast iron borings	*24.00-25.00*
Cut structurals, 3 ft	*47.00-48.00*
Punchings & plate scrap	*48.00-49.00*

Cast Iron Grades

No. 1 cupola	*48.00-49.00*
Stove plate	*44.00-45.00*
Unstripped motor blocks	*38.00-39.00*
Clean auto cast	*55.00-56.00*
Drop broken machinery	*55.00-56.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*45.00-46.00*
R.R. malleable	*58.00-59.00*
Rails, 2 ft and under	*57.00-58.00*
Rails, 18 in. and under	*58.00-59.00*
Angles, splice bars	*53.00-54.00*
Axles	*71.00-72.00*
Rails, rerolling	*62.00-63.00*

Stainless Steel Scrap

18-8 bundles & solids	215.00-225.00
18-8 turnings	120.00-125.00
430 bundles & solids	115.00-120.00
430 turnings	55.00-60.00

YOUNGSTOWN

No. 1 heavy melting	*46.00-47.00*
No. 2 heavy melting	*33.00-34.00*
No. 1 busheling	*46.00-47.00*
No. 1 bundles	*46.00-47.00*
No. 2 bundles	*30.00-31.00*
Machine shop turnings	20.00-21.00
Short shovel turnings	25.00-26.00
Cast iron borings	25.00-26.00
Low phos.	*48.00-49.00*
Electric furnace bundles	*48.00-49.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*46.00-47.00*

•Nominal

CLEVELAND

No. 1 heavy melting	*42.00-43.00*
No. 2 heavy melting	30.00-31.00
No. 1 factory bundles	*47.00-48.00*
No. 1 bundles	*42.00-43.00*
No. 2 bundles	*29.00-30.00*
No. 1 busheling	*42.00-43.00*
Machine shop turnings	17.00-18.00
Short shovel turnings	23.00-24.00
Mixed borings, turnings	23.00-24.00
Cast iron borings	23.00-24.00
Cut foundry steel	*42.00-43.00*
Cut structurals, plates 2 ft and under	*49.00-50.00*
Low phos, punchings & plate	*43.00-44.00*
Alloy free, short shovel turnings	25.00-26.00
Electric furnace bundles	*43.00-44.00*

Cast Iron Grades

No. 1 cupola	50.00-51.00
Charging box cast	41.00-42.00*
Heavy breakable cast	41.00-42.00
Stove plate	47.00-48.00
Unstripped motor blocks	36.00-37.00
Brake shoes	39.00-40.00
Clean auto cast	50.00-51.00
Burnt cast	40.00-41.00
Drop broken machinery	53.00-54.00

Railroad Scrap

R.R. malleable	66.00-67.00
Rails, 2 ft and under	60.00-61.00
Rails, 18 in. and under	61.00-62.00
Rails, random lengths	55.00-56.00
Cast steel	*49.00-50.00*
Railroad specialties	53.00-54.00
Uncut tires	46.00-47.00
Angles, splice bars	54.00-55.00
Rails, rerolling	59.00-60.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	215.00-220.00
18-8 turnings	120.00-125.00
430 clips, bundles, solids	115.00-125.00
430 turnings	45.00-55.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	*36.00*
No. 2 heavy melting	*34.00*
No. 1 bundles	*38.00*
No. 2 bundles	*27.00*
No. 1 busheling	*38.00*
Machine shop turnings	*20.00*
Short shovel turnings	*22.00*

Cast Iron Grades

No. 1 cupola	50.00
Charging box cast	40.00
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	50.00
Stove plate	45.00

Railroad Scrap

No. 1 R.R. heavy melt.	*43.00*
Rails, 18 in. and under	53.00
Rails, random lengths	*47.50*
Rails, rerolling	*59.00*
Angles, splice bars	49.00

BIRMINGHAM

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	*28.00-29.00*
No. 1 bundles	33.00-34.00
No. 2 bundles	23.00-24.00
No. 1 busheling	33.00-34.00
Cast iron borings	14.00-15.00
Machine shop turnings	24.00-25.00
Short shovel turnings	25.00-26.00
Bars, crops and plates	44.00-45.00
Structurals & plates	43.00-44.00
Electric furnace bundles	39.00-40.00
Electric furnace:	
2 ft and under	37.00-38.00
3 ft and under	36.00-37.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	53.00-54.00
Charging box cast	29.00-30.00
Unstripped motor blocks	40.00-41.00
No. 1 wheels	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
Rails, 18 in. and under	51.00-52.00
Rails, rerolling	57.00-58.00
Rails, random lengths	45.00-46.00
Angles, splice bars	44.00-45.00

PHILADELPHIA

No. 1 heavy melting	40.00
No. 2 heavy melting	37.00
No. 1 bundles	41.00
No. 2 bundles	26.00-27.00
No. 1 busheling	41.00
Electric furnace bundles	42.00
Mixed borings, turnings	22.00-23.00
Short shovel turnings	26.00-27.00
Machine shop turnings	22.00-23.00
Heavy turnings	36.00-37.00
Structurals & plate	44.00-45.00
Couplers, springs, wheels	46.00
Rail crops, 2 ft & under	59.00-60.00

Cast Iron Grades

No. 1 cupola	39.00-43.00
Heavy breakable cast	43.00
Malleable	68.00
Drop broken machinery	49.00-50.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	31.00-32.00
No. 2 bundles	19.00-20.00
Machine shop turnings	12.00-13.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	16.00-17.00
Low phos. (structurals & plates)	35.00-36.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	195.00-200.00
18-8 borings, turnings	85.00-90.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	90.00-95.00

BUFFALO

No. 1 heavy melting	*39.00-40.00*
No. 2 heavy melting	*32.00-33.00*
No. 1 bundles	*39.00-40.00*
No. 2 bundles	*27.00-28.00*
No. 1 busheling	*39.00-40.00*
Mixed borings, turning	*20.00-21.00*
Machine shop turnings	*18.00-19.00*
Short shovel turnings	*22.00-23.00*
Cast iron borings	*20.00-21.00*
Low phos. structurals and plate, 2 ft and under	*47.00-48.00*

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	46.00-47.00
No. 1 machinery	50.00-51.00

Railroad Scrap

Rails, random lengths	*49.00-50.00*
Rails, 3 ft and under	*55.00-56.00*
Railroad specialties	*48.00-49.00*

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*38.50-39.50*
No. 2 heavy melting	*33.50-34.50*
No. 1 bundles	*38.50-39.50*
No. 2 bundles	*25.00-26.00*
No. 1 busheling	*38.50-39.50*
Machine shop turnings	19.00-20.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	22.00-23.00
Cast iron borings	20.00-21.00
Low phos., 18 in.	47.00-48.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable cast	40.00-41.00
Charging box cast	38.00-39.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	*44.00-45.00*
Rails, 18 in. and under	57.00-58.00
Rails, random lengths	50.00-51.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	35.00
No. 2 heavy melting	32.00
No. 1 bundles	35.00
No. 2 bundles	22.00
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	*43.50*

Cast Iron Grades

No. 1 cupola	43.00
Heavy breakable	27.00-28.00†
Foundry malleable	37.00
Unstripped motor blocks	34.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	31.00-31.50
No. 2 heavy melting	23.00-23.50
No. 1 bundles	31.00-31.50
No. 1 busheling	31.00-31.50
Machine shop turnings	11.00-11.50
Short shovel turnings	13.00-13.50
No. 1 cast	33.00
Mixed cupola cast	33.00
No. 1 machinery cast	34.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*35.00-36.00*
No. 2 heavy melting	23.00-24.00
No. 1 bundles	*36.00-37.00*
No. 2 bundles	*23.00-24.00*
No. 1 busheling	*34.00-35.00*
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	16.00-17.00

Cast Iron Grades

No. 1 cupola	*43.00-44.00*
Stove plate	*32.00-33.00*
Charging box cast	33.00-34.00
Heavy breakable	*34.00-35.00*
Unstripped motor blocks	22.00-23.00
Clean auto cast	47.00-48.00

SEATTLE

No. 1 heavy melting	31.00
No. 2 heavy melting	29.00
No. 1 bundles	29.00
No. 2 bundles	23.00
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	31.00†
Heavy breakable cast	28.00†
Unstripped motor blocks	23.00†
Stove plate (f.o.b. plant)	21.00†

LOS ANGELES

No. 1 heavy melting	36.00
No. 2 heavy melting	34.00
No. 1 bundles	*28.00*
No. 2 bundles	18.00
Machine shop turnings	15.00
Shoveling turnings	18.00
Cast iron borings	15.00
Cut structurals and plate 1 ft and under	*46.00*

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	47.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00

SAN FRANCISCO

No. 1 heavy melting	32.00-34.00
No. 2 heavy melting	30.00-32.00
No. 1 bundles	30.00-32.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

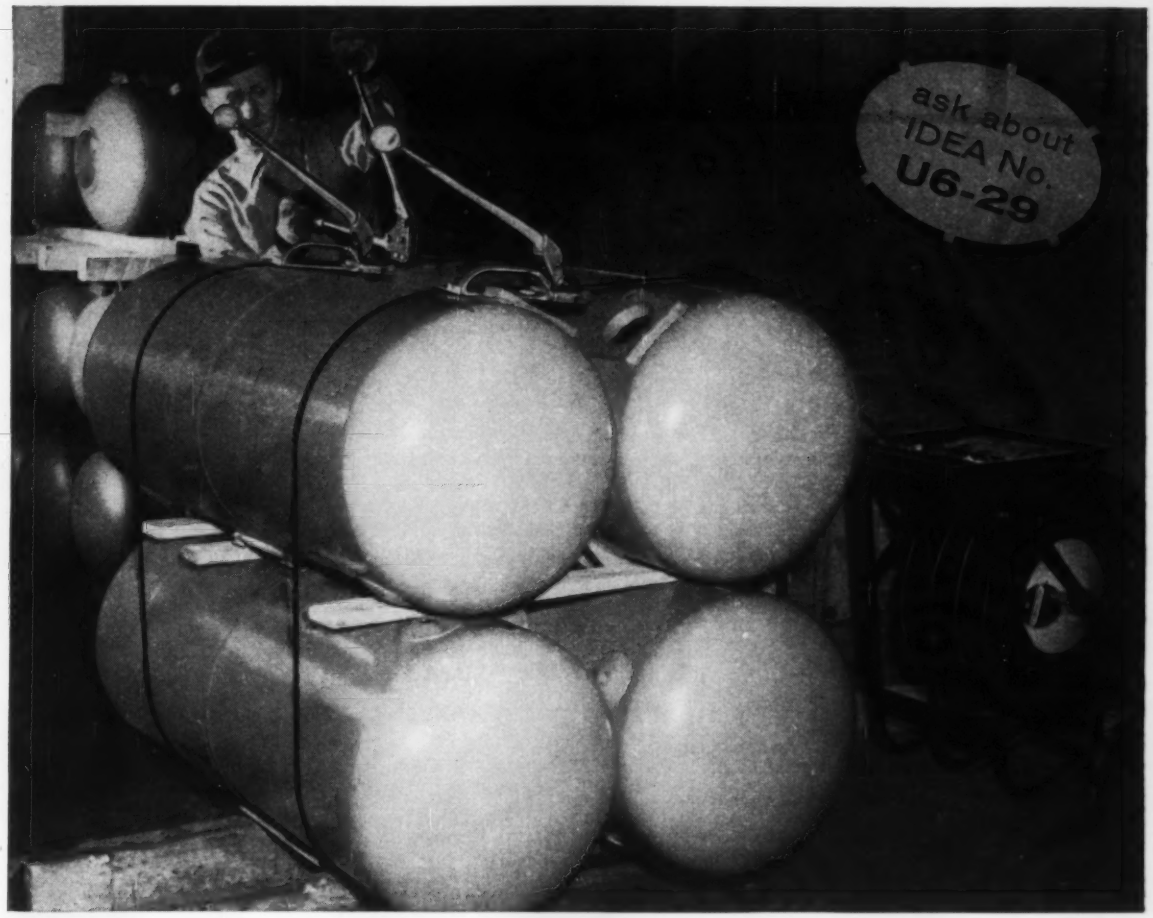
(Brokers' buying prices)

No. 1 heavy melting	34.50
No. 2 heavy melting	30.50
No. 1 bundles	34.50
No. 2 bundles	25.00
Mixed steel scrap	26.50
Mixed borings, turnings	15.00
Busheling, new factory:	
Prepared	34.50
Unprepared	28.50
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	*45.00*

†Nominal.
‡F.o.b. Hamilton, Ont.



Use your AIM* . . . Pressed Steel Tank Co. does . . .

Unitizing reduces tank damage 75%

PRESSED STEEL TANK COMPANY, MILWAUKEE, WISCONSIN, cut damage claims 75% by using heavy-duty Acme Steel Strapping to unitize steel tanks. Working with their Acme Idea Man, a system was developed to strap tanks in units of four for fast handling and safe shipment. (Idea U6-29)

Acme Idea Man E. O. Schroeder worked with Pressed Steel Tank Company to devise unitizing methods.

Unitizing protects tank finish and prevents damage to exterior fittings. Tanks are held securely in position during shipment. This unitizing method also increases plant efficiency: although a strapping crew has been added, overall handling costs are less. Now the unitized tanks are handled entirely with mechanical equipment. Inventory control is simplified and storage space is more efficiently utilized. Customers appreciate improved arrival condition, too!

***Use your Acme Idea Man.** Problem solving in product handling and shipping is his business. Call him at the nearest Acme Steel office. Or write Dept. SDU-39, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

Copper Price Could Go Up

All the factors are present for a boost of 1 to 2 cents a pound in primary. Custom smelter price moves up in two 0.5 cent stages. Platinum market strengthens

Nonferrous Metal Prices, Pages 122 & 123

NOTICE to copper buyers: Don't be surprised if you see primary producers raise their prices momentarily. The stage is set, and all the props that indicate an impending hike are present.

• **Behind the Scenes**—Here's the situation: Copper is in tight supply. Customers who can't get all they want from primary producers have turned to custom smelters whose supply is limited because of a tight scrap market. Some users are reportedly paying a premium to dealers for the red metal.

There's undoubtedly some "artificial" buying in the market because of fears of a midsummer strike, but it doesn't seem to be as widespread as some reports indicate.

It is true that some buyers have become panicky, and some metalmen fear there's a chance of a runaway market.

• **Why Copper's Tight**—Normally these conditions wouldn't bring such a tight market. But imports, which usually account for a good percentage of U. S. consumption, are down to a trickle. The reason's simple: The London Metal Exchange quotation is around 31 cents a pound, compared with the domestic primary quotation of 30 cents. Besides, if a foreign producer were to ship to the U. S. today, he would have to pay 1.7 cents a pound duty. It just wouldn't be profitable.

Another bullish factor is custom smelted copper. It's up to 32 cents a pound and could go higher.

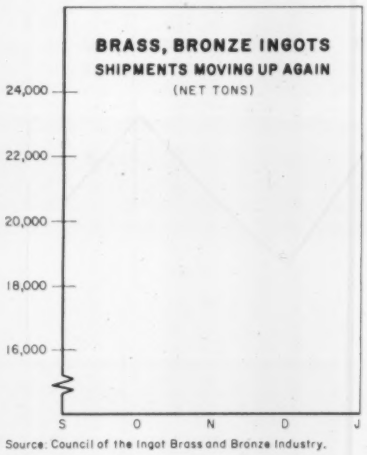
Strikes at a U. S. smelter and a Chilean mine are putting even more pressure on copper's price.

• **Outlook**—The copper situation boils down to this: Either some of the bullish tones in the market will have to disappear quickly or the price will probably rise 1 to 2 cents a pound.

Platinum Market Stronger

After a long siege of spotty demand and steadily declining prices, the platinum market is showing signs of muscle flexing.

By last week prices in the New York market had shot up to $67 an ounce in wholesale quantities and $77 an ounce in retail lots.



Source: Council of the Ingot Brass and Bronze Industry.

Observers cite this reason for the metal's spurt: For some time the Russians had been dumping platinum on the world market for any price they could get. Several weeks ago they decided to withdraw as a seller (evidently finding it unprofitable). This touched off a buying spurt as users started purchasing to fill immediate needs and to replenish inventory.

If Russia stays out of the market, there may be a temporary shortage and more price increases.

Little Pickup This Quarter

Metal sales hit their 1958 peak in the fourth quarter—about the level of business most producers are enjoying now. Here's a rundown on three key metals:

• **Nickel**—Demand is running at a "satisfactory" level. Consensus: There will be little change in sales over the next few months. Prices will hold steady at least through the first half.

• **Magnesium**—Sales are ahead of where they were in the same period last year and about where they were in the fourth quarter. Foundry business is picking up; wrought products are "holding their own." Look for primary production to hit around 44,000 tons this year. It's unlikely you'll see any price fluctuations during the next six months.

• **Titanium**—January mill product shipments hit an estimated 530,000 lb to register the best month since September, 1957. The February figure probably wasn't that good, but it was still way ahead of the corresponding period last year. Both sponge and mill product prices look stable.

NONFERROUS PRICE RECORD

	Price Mar. 4	Last Change	Previous Price	Feb. Avg	Jan. Avg	Mar., 1958 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.700	24.700	26.000
Copper	30.00–32.00	Mar. 4, 1959	30.00–31.50	30.159	29.212	24.163
Lead	11.00	Feb. 24, 1959	11.50	11.368	12.415	12.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	103.75	Mar. 4, 1959	104.125	102.364	99.409	93.425
Zinc	11.00	Feb. 25, 1959	11.50	11.409	11.500	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

ALLIANCE has long been recognized as the "World's largest builders of the world's largest cranes". But size doesn't automatically answer a customer's needs.

ALLIANCE meets customer's capacity requirements with skillful engineering, and absolute minimum of downtime and maintenance.

Look to ALLIANCE for greater overall return for your investment.

Regardless of size or capacity, for economy of operation, ALLIANCE LEADS THE WAY.

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Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.45 per lb deld.
Cobalt: 97.99%, $1.75 per lb for 500-lb keg; $1.77 per lb for 100 lb case; $1.82 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 30.00 deld.; custom smelters, 32.00; lake, 30.00 deld.; fire refined, 29.75 deld.

Germanium: First reduction, less than 1 kg, 41.00 per gram; 1-10 kg, 37.00 per gram; intrinsic grade, 35.00-37.00 per gram.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $75-80 nom. per troy oz.

Lead: Common, 10.80; chemical, 10.90; corroding, 10.90, St. Louis, New York basis, add 0.20.

Lithium: Cups or ingots, 50-100 lb, $10 per lb, f.o.b. Minneapolis; 100-500 lb, $9.50 per lb deld.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, 9Z91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $218-221 per 76 lb flask.

Molybdenum: Unalloyed, turned extrusion, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $16-18 per troy oz.

Platinum: $67-77 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $122-125 per troy oz.

Ruthenium: $55-60 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 91.375 per troy oz.

Sodium: Solid pack, c.l., 19.50; l.c.l., 20.00; brick, c.l., 21.00; l.c.l., 21.50; tank car, 17.00.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y. spot and prompt, 103.75.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), $1.62-1.82; grade A-2 (0.5% Fe max.), $1.70 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 11.00; brass special, 11.25; intermediate, 11.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 12.00; special high grade, 12.25 deld. Diecasting alloy ingot No. 3, 13.50; No. 2, 13.75; No. 5, 14.00 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.875-25.25; No. 12 foundry alloy (No. 2 grade), 21.75-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy, 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75; grade 2, 22.50; grade 3, 21.25; grade 4, 19.75.

Brass Ingot: Red brass, No. 115, 30.00; tin bronze, No. 225, 40.50; No. 245, 34.25; high-leaded tin bronze, No. 305, 34.25; No. 1 yellow No. 405, 24.50; manganese bronze, No. 421, 26.75.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.895, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.875, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 35.35; l.c.l., 35.98. Weatherproof, 20,000-lb lots, 36.29; l.c.l, 37.04.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $16.50 per cwt; pipe, full coils, $16.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, $7.50-17.00; sheared mill plate, $5.25-10.00; wire, $5.75-10.00; forging billets, $3.55-5.75; hot-rolled and forged bars, $4.25-7.50.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003 and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	....
0.136-0.096	43.20-48.30	....
0.126-0.103	....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	....
0.077-0.061	....	39.50-40.70
0.068-0.061	44.30-52.20	....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.00	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circle: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.350	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ¾ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.90-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, .25-30 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 25.50-26.00; No. 2 heavy copper and wire, 23.50-24.00; light copper, 21.50-22.00; No. 1 composition red brass, 18.50-19.00; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 30.00c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	54.13b	51.36c	....	54.32	26.000	26.000	25.250
Yellow Brass	47.40	31.99d	47.94	50.81	19.750	19.000	18.000
Low Brass, 80%	50.13	50.07	50.67	53.44	22.125	21.875	21.375
Red Brass, 85%	51.09	51.03	51.63	54.40	23.000	22.750	22.250
Com. Bronze, 90%	52.60	52.54	53.14	55.66	23.875	23.625	23.125
Manganese Bronze	55.82	49.42	59.92	....	18.375	18.125	17.625
Muntz Metal	50.15	45.46	....	....	18.625	18.375	17.825
Naval Brass	52.08	45.89	58.64	54.49	18.375	18.125	17.625
Silicon Bronze	59.23	58.42	58.77	61.23	25.500	25.250	24.500
Nickel Silver, 10%	62.97	65.29	65.29	....	24.625	24.375	12.312
Phos. Bronze	73.82	74.32	74.32	75.50	27.000	26.750	24.750

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 17.50-18.00; new brass clippings, 16.00-16.50; light brass, 12.50-13.00; heavy yellow brass, 13.50-14.00; new brass rod ends, 14.00-14.50; auto radiators, unsweated, 15.00-15.50; cocks and faucets, 15.00-15.50; brass pipe, 15.50-16.00.

Lead: Heavy, 7.00-7.25; battery plates, 3.00-3.25; linotype and stereotype, 8.25-8.75; electrotype, 6.75-7.25; mixed babbitt, 8.75-9.25.

Monel: Clippings, 28.50-29.50; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 52.00-54.00; rolled anodes, 52.00-54.00; turnings, 38.00-40.00; rod ends, 52.00-54.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 3.00-3.25; old diecast scrap, 1.50-1.75.

Aluminum: Old castings and sheets, 10.00-10.50; clean borings and turnings, 6.50-7.00; segregated low copper clips, 13.25-13.75; segregated high copper clips, 13.25-13.75; mixed low copper clips, 12.25-12.75; mixed high copper clips, 11.25-11.75.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 11.75-12.25; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.50-16.00; mixed low copper clips, 15.75-16.25; mixed high copper clips, 15.00-15.50.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 14.50-15.00; segregated high copper clips, 13.00-13.50; mixed low copper clips, 13.50-14.00; mixed high copper clips, 12.50-13.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 56.00; light scrap, 51.00; turnings and borings, 35.00.

Copper and Brass: No. 1 heavy copper and wire, 28.00; No. 2 heavy copper and wire, 26.50; light copper, 24.25; refinery brass (60% copper) per dry copper content, 25.75.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 28.00; No. 2 heavy copper and wire, 26.50; light copper, 24.25; No. 1 composition borings, 22.00; No. 1 composition solids, 22.50; heavy yellow brass solids, 16.00; yellow brass turnings, 15.00; radiators, 17.50.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.45.

Copper: Flat-rolled, 46.29; oval, 44.50. 5000-10,000 lb; electrodeposited, 39.50, 2000-5000 lb lots; cast, 42.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 122.50; 200-499 lb, 121.00; 500-999 lb, 120.50; 1000 lb or more, 120.00.

Zinc: Balls, 18.00; flat tops, 18.00; flats, 20.75; ovals, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $1.45 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 15.65; 2000-5900 lb, 13.65; 6000-11,900 lb, 13.40; 12,000-22,900 lb, 13.15; 23,000 lb or more, 11.90.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,999 lb, 29.00; 23,000-39,990 lb, 28.50; 40,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 80.60; 100-600 lb, 71.20; 700-1900 lb, 68.40; 2000-9900 lb, 66.60; 10,000 lb or more, 65.20.

Stannous Chloride (Anhydrous): 25 lb, 156.20; 100 lb, 151.40; 400 lb, 148.90; 800-19,900 lb, 108.00; 20,000 lb or more, 102.00.

Stannous Sulphate: Less than 50 lb, 141.30; 50 lb, 111.30; 100-1900 lb, 109.30; 2000 lb or more, 107.30.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 117*)

rests on export demand. Shipments to Japan have been averaging two boatloads a month, and if this volume is increased a price increase is likely.

Seattle—Dealers are awaiting the purchase by Japan of 1.5 million tons of scrap, much of which is expected to originate on the West Coast. Yard activity is limited.

Los Angeles—Sales are down 25 per cent from volume at this time a year ago. Mill inventories are in good shape. Bethlehem Pacific Coast Steel Corp. is the only mill buying sizable tonnage. The price outlook continues uncertain.

Steel Export Price Cuts Reflect Freight Change

New export base prices reflecting recent reductions in export carload rail transportation rates applicable to North Atlantic seaports were effected by the United States Steel Export Co., New York.

Reductions average about $1.20 a ton, except tin mill products are off $2.40 a ton. No changes were made in semifinished products and rails.

REVISED EXPORT STEEL PRICES

	Per 100 Lb
CARBON STEELS	
Joint bars	$7.43
Tie plates	7.06
HR Bars (merchant quality)	6.09
HR Bars (special quality)	6.44
Standard shapes	5.98
C.B. Sections and bearing piles	5.98
Plates	5.75
Floor plates	6.83
Sheet piling	6.95
Reinforcing bars	5.76
CF Bars	8.10
HR Sheets (18 gage and heavier)	5.18
CR Sheets	6.36
Galvanized sheets	6.96
HR Strip	5.35
Vitrenamel sheets (12 gage)	7.23
Electrical sheets HR (electrical grade) Cut lengths (22 gage)	12.85
Long terne sheets	7.74
CR Strip (0.25 carbon and under)	7.51
Tight cooperage hoop	6.02
WIRE PRODUCTS	
Bright nail wire	8.18
Black annealed wire	9.03
Galvanized plain wire	9.73
Barbed wire:	
Lyman 4 pt 5 in. (per 80 rod spool)	$8.80
Glidden 4 pt 3 in. or 6 in. (per 100 lb)	10.13
Iowa 4 pt 3 in. or 6 in. (per 100 lb)	10.13
Waukegan 4 pt 3 in. or 6 in. (per 100 lb)	10.23
Nails (bright) (per 100 lb)	9.13
Staples (galvanized) (per 100 lb)	9.28
TIN MILL PRODUCTS	
107 # basis weight — 14 in. x 20 in. 112 sheets (multiple package, metal containers)	Base Box
Common coke tin plate (1.25 lb coating)	$10.87
Electrolytic tin plate (0.25 lb coating)	9.52
Terne plate (manufacturing)	10.57
Black plate	8.62

	Discount
TUBULAR PRODUCTS	
American Standard Pipe (T & C random lengths)	
Buttweld, black	
2½ in. and 3 in.	minus 10.95
3½ in. and 4 in.	plus 0.45
Buttweld, gal. 2½ and 3 in.	plus 5.30
Buttweld, gal. 3½ and 4 in.	plus 16.30
Seamless, black, 2 in.	plus 16.75
Seamless, black, 2½ in.	plus 10.25
Seamless, black, 3 in.	plus 7.75
Seamless, black, 3½ and 4 in.	plus 6.25
Seamless, black, 5 in.	plus 4.80
Seamless, black, 6 in.	plus 2.30
Seamless, galvanized, 2 in.	plus 31.75
Seamless, galvanized, 2½ in.	plus 27.00
Seamless, galvanized, 3 in.	plus 24.50
Seamless, galvanized, 3½ and 4 in.	plus 23.00
Seamless, galvanized, 5 in.	plus 21.55
Seamless, galvanized, 6 in.	plus 19.05
ALLOY STEELS	Per 100 Lb
HR Bars	$6.91
HR Bar shapes	7.25
Plates	7.95
Standard shapes	7.25
HR Strip	8.85
CF Bars	9.21
HIGH-STRENGTH STEELS	Per 100 Lb
Cor-Ten:	
Plates	$8.40
Standard shapes	8.50
CB Sections	8.50
HR Sheets	7.71
CR Sheets	9.40
HR Bars and bar shapes	8.48
Galvanized sheets	10.21
HR Strip	7.80
MAN-TEN "R":	
Plates	7.05
CB Sections	7.20
Standard shapes	7.20
HR Bars and bar shapes	7.11
HR Sheets	6.73
HR Strip	6.74

STAMPING PLANT WANTED

With heavy tonnage — large bed presses. Send full particulars Box 737, STEEL, Penton Bldg., Cleveland 13, Ohio.

CLEANING EQUIPMENT

For plant maintenance and tank cleaning, hot "jet stream" cleaning, with Sellers Hydraulic Jets. Send for bulletin 424-B.

SELLERS INJECTOR CORP.
1603-Y Hamilton St. Philadelphia 30, Pa.

METALLURGISTS

Large Metal Fabricating manufacturer in Western New York area has immediate openings for graduate metallurgists with a minimum 10 years experience in hot metal forming industries. Current requirements are for Sales; Production Metallurgy; Research and Development. Send detailed resume indicating past earnings and salary desired. All replies confidential.

Write Box 736, STEEL
Penton Bldg. Cleveland 13, Ohio

CLASSIFIED

ACCOUNT WANTED

Have represented two concerns, fastener and perishable tool manufacturers, in North and Western Ohio for past ten years. Call on wholesale hardware, jobbers and industrials. Could devote considerable time to additional non-conflicting line in whole or part of mentioned area. Reply Box 738, STEEL, Penton Bldg., Cleveland 13, Ohio.

SCRAP PILE STEALING YOUR PROFITS?

It can, you know. For every last piece of it represents money — money that belongs in your profit pile, not your scrap pile.

How do you evict this larcenous lodger? It starts disappearing as soon as you call Wheelock, Lovejoy — your local steel service center. W-L offers an extensive variety of special alloy steels — and you get them *cut-to-size*. By ordering your steel as you need it, you can practically eliminate waste. And you save important floor space by reducing your inventory.

Complete W-L facilities — including expert metallurgical service — are at your disposal *now*. See listing below for the W-L Branch nearest you. For complete technical information on grades, applications, heat treating, etc., write today for your FREE COPY of the Wheelock, Lovejoy Data Book.

W-L STEEL SERVICE CENTERS – Cambridge • Cleveland Chicago • Hillside, N. J. • Detroit • Buffalo • Cincinnati
AGENTS – Southern Engineering Company, Charlotte, N. C.; Sanderson-Newbould, Ltd., Montreal & Toronto

WHEELOCK, LOVEJOY & COMPANY, INC.
132 Sidney St., Cambridge 39, Mass.
AMERICAN STEEL WAREHOUSE ASS'N

Structural Shapes . . .

Structural Shape Prices, Page 106

Structural steel bookings amounted to 235,784 tons in January, up 20 per cent from the preceding month's total, and 45 per cent above the 162,158 tons booked in January, 1958, reports the American Institute of Steel Construction.

January shipments totaled 224,260 tons, a drop of 42,000 from the previous month, and 92,482 tons from January, 1958.

Backlogs of 1,794,430 tons as of Jan. 31, were down for the sixth straight month. Over 60 per cent of the total, or 1,107,282 tons, were scheduled for fabrication during the four months ending May 31.

Demand for structurals is picking up seasonally. However, there also is concern among builders about the availability of supplies this summer, in event of a steel strike.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

13,000 tons, 41-story office building, Galbreath Ruffin Realty Co., Third Avenue, between E. 40th and E. 41st Streets, New York, through Turner Construction Co., New York, to Bethlehem Steel Co., Bethlehem, Pa.

2770 tons, Columbia Law School, New York, to Schacht Steel Construction Inc., New York.

240 tons, rebuilding transmission towers, Norwalk, Conn., Connecticut Power & Light Co., to Bethlehem Steel Co., Bethlehem, Pa.

200 tons, Boeing Airplane wing construction facility, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; general contract to H. S. Ferguson Co., Seattle, low at $256,200.

190 tons, regional vocational school, Hartford, Conn., to Standard Structural Steel Co., Hartford; Wexler Construction Co., Newton Highlands, Mass., general contractor.

115 tons, Oregon Pulp & Paper Co., office, Portland, Oreg., to A. Young & Co. Iron Works, Portland, Oreg.

STRUCTURAL STEEL PENDING

45,000-50,000 tons, 55-story Grand Central City office building, New York; bids to be asked in a few months; structure to be built by Diesel Construction Co. from plans by Emery Roth & Sons, New York; James Ruderman, New York, is consulting engineer on steel construction.

3205 tons, Clear, Alaska, missile detection base; Isaacson Iron Works, Seattle, is low bidder at $721,856 to the U. S. Engineer, Seattle.

1710 tons, state bridge, Messalonskee stream, Waterville, Maine; bids March 25, to Augusta, Maine.

1150 tons, Idaho State underpass, Pocatello, Idaho; bids in; Pickett & Nelson low bidder.

1000 tons, also reinforcing bars; unit No. 2, Queensborough Bridge, Fraser River, near New Westminster, B. C.; John Laing & Son (Canada) Ltd., Vancouver, B. C., is low bidder at $2,245,464.

850 tons, Esso Standard lube oil improvement building, Bayway, N. J., Sumner-Sollitt Co., 307 N. Michigan Blvd., Chicago, engineer and general contractor.

700 tons, fiber drum plant, Continental Can Co., Carteret, N. J., Walter Kidde Constructors Inc., 140 Cedar St., New York, engineer and general contractor.

600 tons, Public School No. 100, Bronx, N. Y.; bids March 12.

250 tons, Public School No. 141, Queens, N. Y., Planet Construction Corp., 11 W. 42nd St., New York, low on the general contract.

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TO FIND THE MAN YOU NEED . . .

Place an advertisement in the "Help Wanted" columns of STEEL's classified pages. Your advertisement will reach the qualified men you need, because STEEL is addressed to highly-trained men in all phases of metalworking

STEEL
The Metalworking Weekly

Lincoln

WELDYNAMICS

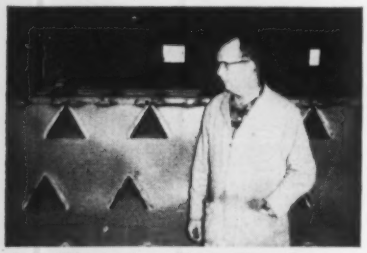
NEWS ABOUT ARC WELDING AT WORK CUTTING COSTS

AEROGLIDE TRIMS WELDING COSTS 1/3 ...IMPROVES PRODUCT QUALITY

Structural parts are welded faster and easier with Jetweld.

Like many other manufacturers, Aeroglide Corporation of Raleigh, North Carolina, found themselves caught in a price-cost squeeze last year.

Aeroglide is one of the largest manufacturers of produce handling equipment and grain driers. All the equipment they build is welded and much of the welding is on sheet metal. Their biggest cost problem involved the sheet metal welds. Burn-through and spatter were eating up shop time and profits.



John Wyatt, Aeroglide's Shop Superintendent, "Our whole shop is more efficient because of improved welding methods."

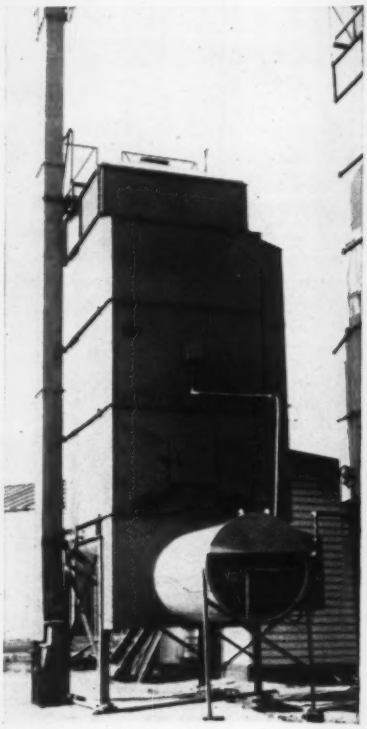
John P. Wyatt, Jr., Aeroglide's shop superintendent and James F. Kelly, President, decided to seek outside help. They invited Kirk Sterling, a welding engineer with Lincoln's Charlotte, N.C. office to help them make a survey of Aeroglide's welding operations.

Working closely with Mr. Wyatt, Sterling made a careful analysis of their welding jobs. The burn-through and cleaning problems were solved with a switch to Fleetweld 37 electrodes which are specially designed for sheet metal welds. Greater production efficiency on heavier structural members was achieved with iron-powder Jetweld electrodes.

Mr. Sterling also conducted a five-day welding clinic which was voluntarily attended by Aeroglide's weldors and shop supervisors. Higher shop efficiency resulted from a better understanding of welding procedures as a result of the clinic.

The total effect—a 33% cut in welding costs.

Jim Kelly, Aeroglide's youthful president, commented, "The Lincoln people have done us a great service. Big industries can go to their suppliers and demand the products they need. Companies like ours depend on our suppliers to show us how to get the most out of what's available. Lincoln has helped us build a better product . . . and made a stronger Lincoln customer.



Aeroglide grain dryers, easier to assemble, sturdier and more efficient with welded construction.

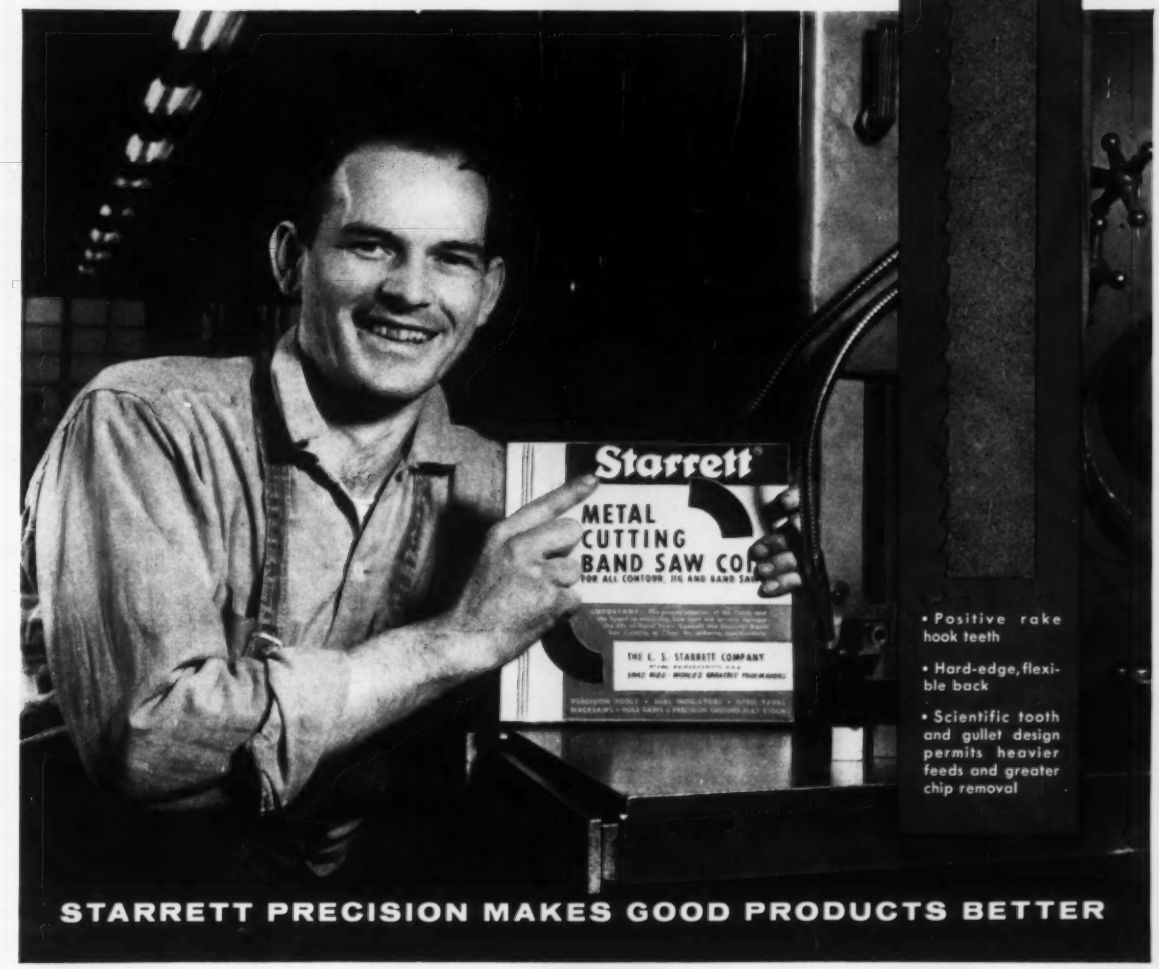
The LINCOLN ELECTRIC CO.
Dept. 1649, Cleveland 17, Ohio
The World's Largest Manufacturer of Arc Welding Equipment

New STARRETT HOOK TOOTH BAND SAW

for faster production, lower costs, longer blade life on tough jobs

This new Starrett band saw blade with positive rake hook teeth slices through non-ferrous metals, special compositions, Bakelite, plastics and wood with a cool, clean shear cut that takes less feed pressure. It defies the toughest cutting jobs — produces big, curled chips that roll smoothly out of the rounded gullets without clogging.

Try this new Starrett *Hook Tooth* Band Saw Blade. You'll find that its cool, clean cutting action and edge-holding ability gives you better work with a smoother finish at lower cost. Your nearby Industrial Supply Distributor has it in individually boxed welded bands or coils of 100, 250 or 500 feet in handy safety pull-out cartons. Call him for quality products, dependable service. Or write for Starrett Hacksaw and Band Saw Catalog. Address Dept. BG, The L. S. Starrett Company, Athol, Massachusetts, U. S. A.


Starrett
METAL
CUTTING
BAND SAW CO
THE L. S. STARRETT COMPANY
• Positive rake hook teeth
• Hard-edge, flexible back
• Scientific tooth and gullet design permits heavier feeds and greater chip removal

STARRETT PRECISION MAKES GOOD PRODUCTS BETTER

STARRETT TOOLS

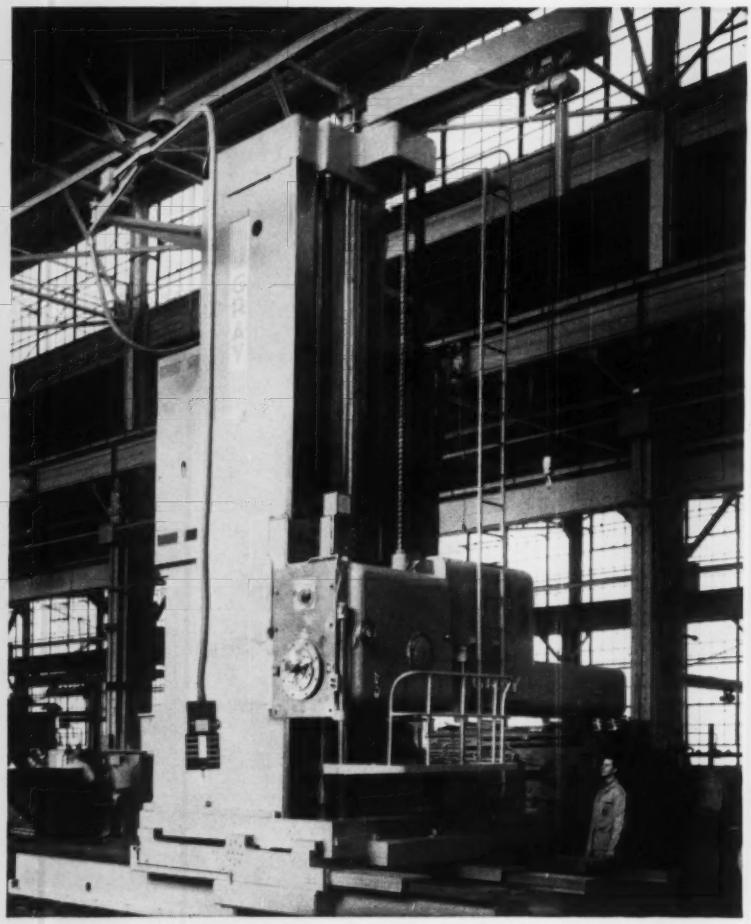
Starrett **HACKSAWS • HOLE SAWS**
BAND SAWS • BAND KNIVES

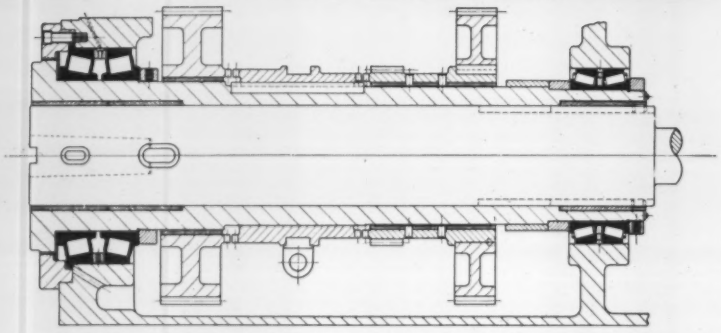
WORLD'S GREATEST TOOLMAKERS

PRECISION TOOLS • DIAL INDICATORS • STEEL TAPES • GROUND FLAT STOCK • HACKSAWS • HOLE SAWS • BAND SAWS • BAND KNIVES

Visit the Starrett Exhibit—Booth 632—Western Metal Exposition

"We switched to TIMKEN® bearings to get greater accuracy and capacity," reports The G. A. Gray Company





How **THE G. A. GRAY COMPANY** mounts the spindle of its new Model 880-FC boring machine on Timken tapered roller bearings to get spindle accuracy, assure precision performance.

HERE'S a precision giant! It's The G. A. Gray Company's new 212½-ton Model 880-FC horizontal boring, drilling and milling machine. Weighing 425,000 lbs., it stands 27 ft. high, spans 76½ ft. in length. It can machine a block of metal 65 ft. long and 15½ ft. high—works with a precision of .00025". Yet one man operates the huge tool. To keep the spindle running accurately, Gray engineers switched to Timken® tapered roller bearings.

Spindle held rigid. Timken bearings hold the spindle in positive alignment. Their tapered design lets them take both radial and thrust loads in all combinations. And full-line contact between rollers and races gives Timken bearings extra load-carrying capacity.

Heavy shocks no problem. Rollers and races of Timken bearings are case-carburized to have hard, wear-resistant surfaces and tough, shock-resistant cores.

Friction virtually eliminated. Timken bearings are geometrically designed and precision-made to roll true. They roll the load. They practically eliminate friction, run smoother, longer with minimum maintenance. For extra quality-control, we even make our own steel. No other American bearing maker does. And you can get Timken tapered roller bearings with maximum runout of 75 millionths of an inch. For all these advantages, specify bearings trademarked "TIMKEN". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.

This symbol on a product means its bearings are the best.

BETTER-ness rolls on TIMKEN® tapered roller bearings